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20- Blond overlords of brunett
68- Tall men + high jumping
79- Calc. S from long bones- Pearson formula

129- Goring + statistics

167-184 Nordic crania

179- BZ

192- Cro-Magnon — dolichocephalic & broad face

204- Inheritance by small units

206- Tallest peoples = mixed race

231. 3 P.E.

257. $r_{cranial-facial\ index}$

267. r via C.V.

394- Palate- form

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HARVARD AFRICAN STUDIES

VOLUME VII

EDITORS

E. A. HOOTON, PH.D., B.LITT.

NATICA I. BATES

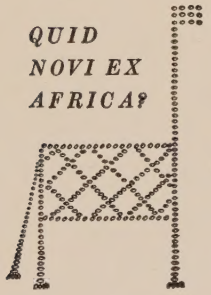
HARVARD AFRICAN STUDIES

VOLUME VII

THE ANCIENT INHABITANTS OF THE CANARY ISLANDS

BY

EARNEST A. HOOTON, PH.D., B.LITT.



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TO THE MEMORY OF

ORIC BATES

PREFACE

THIS monograph is the result of an expedition to the island of Tenerife in the summer of 1915, carried out under the direction and at the expense of the late Oric Bates, the founder and first editor of the Harvard African Studies. Mr. Bates was especially interested in the archaeology and ethnology of the Berber peoples of North Africa, and had himself conducted extensive excavations in the eastern portion of the Berber area. He was also the author of an authoritative work on the Eastern Libyans.[1]

The Canary Islands expedition was part of a project of Mr. Bates to carry out an extensive anthropological and archaeological survey of North Africa, he to work from the eastern end of the field, and I to begin at its westernmost extremity. In accordance with this plan I proceeded to Gibraltar, accompanied by my wife, and after some delay secured passage on a steamer from Cadiz to Tenerife. We landed at Santa Cruz de Tenerife on July 9, 1915.

Two weeks were consumed in the investigation of Guanche caves in the region of Santa Cruz, but these, without exception, had been looted and were almost entirely sterile. Information indicated the southern portion of the island as a more profitable field for exploration and through the kind offices of Miss Marie Zerola of Orotava, Mr. Rush, manager of the Fyffe Company, generously offered to send us down to the Company's fruit plantation at Hoya Grande, between Adeje and Guia, in the neighborhood of which there were said to be some recently discovered caves. Accordingly, we embarked on the fruit steamer on the 24th of July and after a seven-hour sail reached Hoya Grande. Here we were most hospitably received by Mr. Alexander Baillon, manager of the plantation, and were installed in commodious and comfortable quarters in the plantation house. As the country is extremely rugged and cut up with innumerable deep *barrancos*, in the precipitous sides of which the Guanche burial caves are found, Mr. Baillon made the very practical suggestion that a number of native mountaineers be hired to work these ravines for the purpose of discovering burial places. This plan was put into effect and had just begun to yield satisfactory results when operations were interrupted by an order from the Governor of the island that all exploration of caves and removal of remains and objects be stopped. This action was the result of an inflammatory article written in a Santa Cruz newspaper. After an unsuccessful effort to secure a permit to continue explorations, by cabling the Minister of Public Instruction at Madrid, we returned to Santa Cruz.

From the 4th of August to the 21st of August I was engaged in the study of the ancient crania in the Municipal Museum of Santa Cruz. During this period I measured all of the adult crania in this collection, to the number of 454. A thorough study of all of the archaeo-

[1] Oric Bates, The Eastern Libyans, London, 1914.

100128

logical objects in the museum was also accomplished. On the 31st of August we sailed for Cadiz, arriving on September 3d. After waiting for a Boston steamer in Gibraltar and making a short trip to Tangier, we caught the S. S. *Canopic* and reached Boston September 22, 1915.

The intention was to secure a proper authorization to resume explorations, and to return to the Canary Islands in the following summer. This plan was frustrated by our failure to secure the hoped-for permit from the Spanish Government, probably because of continuous changes in the cabinet. Furthermore, owing to the war, it was impossible to go to the Canary Islands for archaeological purposes. Mr. Bates and I planned together to complete the archaeological and somatological survey of this archipelago at the close of the war. After Mr. Bates's death in 1917 it became apparent that the prospect of completing this project was very remote. The principal result of the 1915 expedition was a large mass of craniometric material, the analysis and tabulation of which has occupied a great deal of my leisure time for the past seven years, and the presentation of which is the main portion of this volume.

During my sojourn in the Canary Islands, I received a great deal of help and encouragement from a number of the residents of Tenerife. I wish to acknowledge my indebtedness to Dr. George V. Perez and to Miss Marie Zerola, of Orotava, for valuable information and advice in regard to archaeological sites. I am under great obligation to Mr. Rush, of Santa Cruz, for extending to us the magnificent hospitality of Fyffes, Ltd., which put at the disposal of the party the steamer and motor transport facilities of the company, provided us with most comfortable living quarters on its plantation at Hoya Grande, and was chiefly responsible for any measure of success attained in the work of archaeological reconnaissance. I have the warmest appreciation also of the invaluable assistance given me by Mr. Alexander Baillon, of Fyffes, Ltd., Hoya Grande, without whose help nothing would have been accomplished in the south of the island. The hospitality and innumerable kindnesses of Mr. and Mrs. Baillon made the sojourn of our party in Hoya Grande altogether delightful.

To Sr. Teodomino Robayne y Marrera, Director of the Municipal Museum of Santa Cruz de Tenerife, I am indebted for the privilege of measuring and studying the extensive skeletal and archaeological collections of that institution. Sr. Robayne put at my disposal all of the resources of the museum, as well as his own profound store of knowledge concerning the antiquities of the island. He assisted me to collect ethnological specimens, presented the expedition with a Guanche skull from his private collection, and offered to the entire party the fullest possible measure of professional courtesy and of personal kindness.

Mr. George Stiles, at that time United States Consul at Tenerife, assisted me in every way he was able. His son, Mr. Kean Stiles, accompanied me on most of my archaeological trips in the capacity of interpreter.

In the preparation of this report I have had assistance which I wish to acknowledge here. All the recording of measurements and observations, and many of the notes on the

archaeological collections are the work of my wife and of her brother, Mr. Jay B. Camp. The calculation of indices and a large amount of computation has been done by my wife. Others of my associates or students who have assisted in the work are Miss Ruth Otis Sawtell, Miss Elizabeth Jones, Dr. Fred Sterns, and Miss Ruth Burr Sanborn.

I am greatly indebted to the late Lord Abercromby for complete sets of photographs illustrating the pottery collections of the museum at Las Palmas. For permission to reproduce them in this publication I am under obligation both to him and to the Royal Anthropological Institute of Great Britain and Ireland.

Finally I wish to thank Mrs. Oric Bates, whose generosity has made possible the publication not only of this volume but of all the other volumes of the Harvard African Studies.

E. A. HOOTON

Peabody Museum, Cambridge, Massachusetts

June 5, 1924

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THE ANCIENT INHABITANTS OF THE CANARY ISLANDS

CHAPTER I

GENERAL ETHNOGRAPHY OF THE CANARY ISLANDS IN ANTIQUITY

SOURCES

The history of the Canary Islands and the manners, customs, and industries of their ancient inhabitants have been frequently and adequately discussed by a considerable number of competent authorities. Any elaborate treatment of the ethnographic features of the ancient Canarians would not constitute a contribution to knowledge, in the absence of new historical data on these extinct peoples. In this work, therefore, the ethnographic section will be limited to the presentation of a table summarizing the principal cultural features of the various islands of the archipelago in antiquity, and to a discussion of the inter-insular differences, together with certain comparisons of an ethnological nature which have not been offered by previous writers. The best of the early authorities on the Canary Islands are Espinosa, Galindo, Viana, and Bontier and Le Verrier, the chaplains of Jean de Bethencourt. Of these, only the last two named are contemporary. Bontier and Le Verrier were two priests who accompanied the Norman, Jean de Bethencourt, upon his expedition which resulted in the conquest of Lanzarote and Fuerteventura in 1402. The MS. of their recollections seems to have been written between that date and 1406. It deals more with the doings of the Norman baron and his companions than with the native inhabitants of the islands. A valuable annotated edition and English translation of this work has been published by the Hakluyt Society.[1]

Alonso de Espinosa was a Dominican preaching friar who wrote in 1580–1590. He came to Tenerife attracted by the legend that a holy image of the Virgin and Child had been among the Guanches for nearly a century before the conquest. He became a member of the religious fraternity which had charge of the image at Candelaria. The principal object of his work is a history of the image and the miracles performed by it. His account of the Guanches of Tenerife is the best extant. His work was first published in Seville in 1594. The Hakluyt Society has published an excellent annotated translation of this work also.[2]

Antonio de Viana was a native of Tenerife who wrote a versified history of the island in 1604. He is not considered as reliable as Espinosa on account of his poetical tendencies.[3] Friar Juan de Abreu de Galindo was a Spanish Franciscan monk who was a resident of the

[1] P. Bontier and J. Le Verrier, The Canarian, London, 1872.

[2] Alonso de Espinosa, The Guanches of Tenerife, London, 1907. This volume contains the best bibliography of the Canary Islands between the years 1341–1907.

[3] Antonio de Viana, Antigüedades des las Islas Afortunadas de la Gran Canaria, Sevilla, 1604.

island of La Palma and wrote in 1632. His work contains the most general information on the inhabitants of the islands of any of the accounts of early writers, although he probably copied much of his description of the Guanches of Tenerife from Espinosa. His work was translated into English by George Glas in 1764.[1]

The best and most convenient sources for the ancient accounts of the peoples and history of the Canary Islands are the notes, introductions, and bibliography published, with the translations of Bontier and Le Verrier and of Espinosa, by the Hakluyt Society.[2] These works contain summaries and appraisals of the historical value of all early authorities on this subject. The ethnographic table given below has been largely compiled from the above-mentioned authorities and from the editions cited. The modern authorities which have been most used in this table are Berthelot,[3] Chil y Naranjo,[4] and Verneau.[5]

The work of Dr. Chil y Naranjo contains copious quotations from a number of early authorities whose works are unpublished or not easily obtainable, and is the most exhaustive account of the customs of the ancient Canarians. Unfortunately the author died when only two of the projected twelve volumes of the work had been published.

Dr. Verneau's works are important because they include by far the most reliable and comprehensive survey of the archaeology and physical anthropology of the Canary Islands, based upon five years of exploration in the archipelago and upon a thoroughly first-rate knowledge of the sciences involved.

[1] Juan de Abreu de Galindo, The History of the Discovery and Conquest of the Canary Islands. Translated from a Spanish Manuscript. . . . by George Glas, London, 1764. There is no copy of Galindo's original work in the Harvard Library.

[2] Bontier and Le Verrier, op. cit., especially the introduction by R. H. Major. Espinosa, op. cit., especially the introduction, vocabulary, and bibliography by Sir Clements Markham.

[3] P. Barker-Webb and S. Berthelot, Histoire naturelle des Îles Canaries, Paris, 1835–1849. The Harvard Library has only the first volume. Sabin Berthelot, Mémoire sur les Guanches. (Mém. Soc. Ethnol., Paris, 1841, vol. 1, pp. 129–231; 1845, vol. 2, pp. 77–149).

[4] Gregorio Chil y Naranjo, Estudios historicos, climatalógicos y patológicos de las Islas Canarias, Las Palmas, 1876–1889.

[5] René Verneau, Rapport sur une mission scientifique dans l'Archipel Canarien (Archiv. des Miss. Sci. et Litt., Paris, 1887, s. 3, vol. 13, pp. 557–817), hereafter cited as "Rapport." Cinq Années de Séjour aux Îles Canaries, Paris, 1891.

Physical Characteristics and Personal Habits of the Ancient Canarians

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Color of hair and skin	White and rosy in the north, brown in the south. Hair long and sometimes blond; some blue eyes (E.G.)	Some blonds but more brunets. Little data. "Dark" (G.)	Apparently darker than Guanches, but some blonds	Probably brown. Perhaps some blonds	Probably more blonds than in Gomera or Hierro	Mostly brown "Dark" (G.)	Mostly brown. "Dark" (G.)
Stature	Tall in north, short in south	Varying from tall to short	Medium or short	Medium or short, with some tall	Tall	Tall	Tall
Dress	Men: goatskin shirt "*tamarco*," leather puttees, boots or sandals; palm-fibre apron may often have been sole clothing of lower classes. Women: skin petticoat down to ground under the *tamarco* (E.)	Rush-woven hooded shirt with leather girdle, cloaks and caps of goatskin adorned with feathers, shoes of rawhide (G.) Women: wore short skirts. Chiefs had painted breechclouts of palm; others of rush. Many went nearly naked. Goatskins variously dyed.	No clothes. (A.) Goatskin *tamarco*, pigskin shoes for men; a petticoat in addition for women. Skins dyed red and blue (G.)	Same as in Gomera	Probably the same as in Gomera	The same. Also short breeches, hose, and leather caps. Hairdress like that of Lanzarote (G.)	*Tamarco* with hood, goatskin shoes, bonnets with three feathers in front. King wore a diadem of goatskin, like a bishop's mitre, decked with shells. Hair worn long and beards plaited (G.)
Painting, tattooing	Painted bodies with juice of herbs, green, red, yellow (A.)	Patterns printed with pottery stamps	No data	No data	No data	No data	No data
Toilet	Both sexes anointed body with sheep oil. Washed hands and faces after sleep and before and after meals (G.)	Men shaved with stone knives (A.)					
Medicine, surgery	Infusion of mocan juice used for pains in sides; bleeding of arms, head, and forehead with obsidian knife (E.); trepanation	No data	No data	Rubbed sick persons with tallow and sweated them. Cauterized wounds and rubbed with butter (G.)	No data	No data	Scarified, burned, and anointed with butter. Also used herbs for medicinal purposes (G.)

Material Culture in the Canary Islands in Antiquity

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Agriculture	Cultivation of barley, beans. Wheat (?)	Cultivation of barley, wheat (?)	Probable cultivation of barley	None (G.) "Grain of all kinds" (B.V.)	None	Cultivation of barley (?)	Cultivation of barley
Domestic animals	Goats, sheep, pigs, dogs	Goats, sheep, pigs, dogs	Goats, sheep, pigs, dogs	Goats, sheep, pigs, dogs	Goats, sheep, pigs, dogs	Goats	Goats, sheep, pigs, dogs
Fishing	Hook and line	Spear and torch; nets	Driving fish into nets. Hook and line	No methods stated	No methods stated	Harpooning	Harpooning, hook and line, nets, club and torch; poisoning water with euphorbia
Hunting	No data	No data	No data	Hunted lizards	No data	No data	Killed birds with stones
Foods	*Gofio*—toasted barley ground and mixed with water, milk, or mutton fat; fish, half-roasted flesh of goat, sheep, pig; milk, butter, cheese, mocan honey, beans.	*Gofio;* flesh of goat, sheep, pig; fish, butter, milk, fruit	*Gofio;* flesh of goat, sheep, pig; fish, milk, fruit	Fern-root bread; flesh of goat, sheep, pig, lizards; fish, milk, butter, fruit	Fern-root and seed meal, flesh and milk	Fish, flesh, milk, fruit, cheese, tallow, barley (?)	Same as Fuerteventura, also barley *gofio*
Habitations	Caves, natural or artificial; perhaps dry-stone houses also	Caves, natural and artificial; elliptical houses of dry masonry; wooden roofs covered with earth, plastered walls	Caves, dry-stone huts	Caves and dry-masonry huts, circular and covered with branches	Caves	Dry-stone huts, caves	Dry-stone huts, caves
Burial places	Caves	Caves; trenches lined with pine or slabs of stone and covered with heaps of stone; under tumuli; in artificial caves	Caves	Caves	Caves	Caves, stone tumuli	Caves, stone tumuli

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Stone-working	Flakes, points, scrapers, and knives of obsidian and basalt — poorly made. Lava mills, hammer and rubbing stones, lava basins or lamps	Chipped implements of obsidian and basalt, few polished greenstone celts, lava mills and basins, building stones, possibly crude idols, pestles, mortars	Chipped implements of obsidian and basalt, lava mills, hammer and rubbing stones, pestles. One polished green-stone celt	Probably chipped implements of volcanic rock, and lava mills	Probably the same as in Hierro	Chipped implements of volcanic rock, lava mills, building stones	Same as in Fuerteventura
Bone-working	Awls, points, needles, beads, polishers	Awls, points, needles, beads, polishers	Probably the same	Probably the same; certainly awls, needles	Probably the same	Probably the same; perforated disks	Probably the same
Horn-working	Points and fishhooks	Points and fishhooks	No data	No data	No data	No data	Points and fishhooks
Shell-working	Perforated ornaments and fishhooks	Probably the same	Probably the same	Probably the same	Probably the same	Probably the same	Probably the same
Wood-working	Lances with fire-hardened points, clubs, spoons, bowls and casseroles, staves, coffins, biers	Same as in Tenerife; also beams, doors, possibly idols	Lances, clubs, casseroles	Lances, staves, clubs	Lances, clubs, casseroles	Lances, clubs, staves, fire sticks	Lances, clubs, staves
Ceramics	Crude conical jars and bowls, little incised decoration; disk and cylinder beads	Many forms of pottery, often painted, well made; beads, stamps, crude animal and human figurines	Crude bowls, clay pellets for slings	No data	Bowls with fine curvilinear ornament	Conical jars, bowls, snouted jars, simple incised ornament	Pottery with incised ornament
Leather-working	Skillfully tanned and sewed garments	Same as in Tenerife	Probably the same	The same	Probably the same	The same	The same
Textiles	Cords; probably nets, mats, and baskets	Cords, nets, mats, baskets	Probably the same	Probably the same	Cords, baskets; probably mats	Probably the same	Probably the same

SOCIAL ORGANIZATION IN THE CANARY ISLANDS IN ANTIQUITY

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Marriage form	Polygyny: a man had as many wives as he could support (E.) Monogamy (G.V.)	Monogamy	Some form of group marriage. Wife-lending to strangers and friends (G.)	Monogamy	No data	Monogamy	Polyandry; wife lived with three spouses, a month with each (G.)
Contract	By consent of principals and bride's parents. Mothers and sisters ineligible (E.)	Consent of principals Fattening of the fiancée (G.)	No data	By purchase. Goats paid to bride's parents (G.)	No data	No data	No data
Ceremony	None (E.) *Jus primae noctis* of chief (C.)	Fête, dancing. *Jus primae noctis* of *guanarteme* (G.)	No data	No data	No data	No data	No data
Divorce	By repudiation of husband. Widows could remarry. Children then illegitimate (E.)	Facile, sterility a ground	No data	No data	No data	Adultery sole ground	Adultery sole ground
Parental care and filial respect	Ceremonial washing of infants by godmother (E.) Instruction	Ceremonial washing of infants, with religious rites (G.) Instruction	No data	No data	Aged left at own request to die in burial caves (G.)	Love of children and filial respect	Children loved regardless of sex. Filial respect. Son free of paternal rule at maturity (G.)
Position of woman	Very high. Modest in dress. Death penalty for accosting lone women (E.)	Regarded as soothsayers. Vestal virgins	Rather low	No data	Women famed for courage	Very chaste; Priestesses	Great respect. No prostitution. Adultery a grave crime
Inheritance	Lordship passed through fraternal line (E.)	No data	Sisters' children	No data	No data	No data	No data

Political Organization of the Canary Islands in Antiquity

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Social classes	Nobles, plebeians. Belief in separate creation. Divine right (G.)	Nobles, plebeians. Nobility by birth, hair and beard worn long; short by plebeians	No data	No social classes, or two classes occasionally intermarrying	No data	Nobles (*altahas*) and plebeians	Nobles and plebeians
Rulers and officials. Tribes	Hereditary king; later hereditary princes — *menceys*. Taoro *mencey* supreme	Ten independent tribes; hereditary chiefs, later brought under rule of one *guanarteme*	Four tribes, independent, hereditary chiefs, formerly under one ruler	One benevolent paternal prince	Principal tribe and twelve secondary tribes, ruled by hereditary chiefs	Two separate principalities, north and south states, ruled by kings or chiefs	Ruled by a king or prince, probably hereditary
Subordinate officials	*Sigones* chosen from the nobles. *Guanames* — priests	*Guayres*, or councillors; *Faycan* or high priest; all chosen from nobles.	No data	Apparently none, except priests or soothsayers.	No data	No data	No data
Council or assembly	*Tagoror* — a council of *sigones*, probably twelve	*Sabor* a council of twelve *guayres*, and an assembly of nobles	No data, but probably an assembly	Said to have lacked a council. Places of assembly exist	No data	King and *altahas*	King and *guayres*
Succession	Office of *mencey* inherited by brothers, and eldest son of eldest brother.	No data. Apparently sons inherited	No data	No data	No data	No data	No data
Duties of ruler	Presided over council, administered law, inflicted punishment, led in war	Led in war. *Faycag* was priest and judge	No data	No data. Received no stipulated tribute, but voluntary gifts (G.)	No data	No data	No data

JUSTICE IN THE CANARY ISLANDS IN ANTIQUITY

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Administration	By *mencey* and council of *sigones* in *tagoror*	Probably by high priest and council. Separate judges for nobles	No data	By prince	No data	By kings or chiefs	By king and council of nobles
Crimes and punishments	Theft: flogging with *mencey's* crook; homicide: *lex talionis:* flocks of murderer taken; adultery: burial alive; seduction: girl imprisoned until married by lover; insulting elders: children said to be stoned; accosting woman: capital penalty. (No capital punishment. G.) Criminals hurled from cliffs (V.)	*Lex talionis* for most offences. Homicide: head crushed on rock (G.) Capital punishment	No data	Theft: loss of an eye; homicide: *lex talionis.* No other crimes recognized (G.)	Theft not a crime	Homicide: death, but *altahas* were exempt from punishment. Capital punishment: criminals' heads smashed against flat stones	Breaking and entering: head crushed with rock; homicide: *lex talionis.* Seduction and rape, serious crimes. Capital punishment

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Warfare — causes	Pasturage and boundary disputes; political supremacy	The same	The same	No warfare	The same	The same	The same
Weapons	Wooden lances, stones, maces with obsidian blades, shields (?).	Wooden lances, clubs, stones, stone knives, maces	The same and slings	No weapons	Lances and stones	The same	The same
Estimated military force at conquest.	6,000 (A.) 7,000 in Taoro (G.)	14,000 (G.) 5,000 (A.) 10,000 (B.)	700 (A.)		500 (A.)	4,000 (G.)	400 (B. V.)
Customs in war	Whistling and smoke signals; women carried provisions; warriors fought naked with skin *tamarcos* twisted around left arms. Aged, women, children allowed to return home	Ambushes and surprise attacks especially used. After European contact they adopted shields and wooden swords. Trained seagulls as decoys for ambush	No especial data		No data	No data	No data
Sports	Lifting rocks, leaping, running; possibly duelling as in Gran Canaria. No swimming	Pitching poles; cliff climbing; wrestling; duelling with lances, cudgels and knives; swimming	Dodging stones and darts without moving feet Swimming	Leaping with poles	Wrestling	Jumping over poles held by two men over their heads, duels with cudgels, swimming	Same as in Fuerteventura
Dancing	A dance called the *Canario*	The *Canario*, a dance with a short, quick step. Assembled in houses for singing and dancing	Said to spend large part of time in dancing and singing	Danced in a ring, joining hands and occasionally jumping in pairs	Dancing much in favor	Fond of dancing	Fond of dancing
Singing and music	Sang very sweetly	Dirges or amorous sonnets set to plaintive tunes. War exploits. Flute and tambour (?), hand-clapping and beating of feet	Songs of ancestral valor	Songs on grave subjects to plaintive tunes	Religious chants to Idafe (G.)	Singing accompanied by clapping of hands and beating of feet	Same as in Fuerteventura

RELIGIOUS ORGANIZATION IN THE CANARY ISLANDS IN ANTIQUITY

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Worship of supreme being	A god of the heavens, Achaman	A god of the heavens — Alcoran, Acoran	No data	Eraoranzan, a god of the heavens, and Moneiba, a goddess	A god of the heavens, Abora	A god of the heavens	A god of the heavens
Minor deities Evil spirit	Guayota; lived in the Peak of Teyde	Gaviot; when assuming animal form called Tibicene. Lived in bowels of the earth	No data	No data	Idafe: lived on a high rock. Irvene, the devil in guise of a dog	Two sibyls consulted with the devil, Gaviot	No special data
Solar and lunar worship	Practised	Practised	No data	No data	Practised	Probably practised. Souls of ancestors worshipped	No data
Sacrifice and prayer	Prayer and religious processions with flocks	Prayers; offerings of fruit, entrails, flesh, butter; libations of milk	No data	No sacrifice; fasting and prayer only when rain was needed	Sacrificed roast flesh to Idafe; also prayed to him	Prayer and sacrifice of milk and butter	Prayer and offerings of milk and butter
Idols	None	Animal and anthropomorphic; of pottery, wood, and stone	No data	None	None	Apparently none	Apparently none
Temples or sacred places	No data. Probably high places	High places, altars, sacred caves or priestly dwellings, temples or chapels	No data. Remains of altars	High places, cave of the sacred pig, altars	Sacred rock pinnacles, rock piles	High places, altars, stone temples	Same as in Fuerteventura
Priesthood	Religious caste called *guanames;* sacred women who washed new-born infants	High priest, *faycag,* and lesser priests; vestal virgins — *harimaguadas*	No data	Soothsayers	No data	No data. Evidently soothsaying women	No data
Burial rites	Nobles embalmed by special despised caste Mummies placed on biers or in coffins	Probably only nobles were embalmed Pine coffins sometimes used	Some embalming	Some embalming	Some embalming	Nobles embalmed	Nobles embalmed

SUMMARY OF ETHNOGRAPHIC FEATURES IN THE CANARY ISLANDS

Table 1 is a summary of the most important cultural features reduced to statistical form. In so far as the number of cultural elements is a measure of the complexity of a civilization the order of attainment is: Gran Canaria, Tenerife, Fuerteventura, Lanzarote, Gomera, Hierro, La Palma. But it should be remembered that Hierro and La Palma are the smallest and most westerly of the islands of the group and that our information regarding them is most scanty. However, the sum total of cultural features cannot be taken as a serious indication of the complexity of a civilization when the absence of certain features (e.g., cave dwelling) implies a higher status than its presence. It is none the less true that Hierro and La Palma, each of which contains less than half of the cultural features enumerated, were behind the other islands.

Let us first consider the common factors of ancient Canarian culture — those features which are found in all the islands. One might call this "the Archaic Horizon", borrowing the term from Dr. H. J. Spinden, who applies it to ancient American cultures. This, in the Canary Islands, is a pastoral culture, with fishing subsidiary. The domesticated animals are the dog, goat, sheep, and hog. The flesh of the last three named, and possibly of the first, is the main basis of subsistence. There is no knowledge of agriculture. Stone-working is confined to chipping and there is little in the way of wood-working, aside from the use of clubs and staves with points hardened in the fire. Some bone awls and points are used, as well as similar implements of horn. The skins of animals are tanned and used for clothing. A rudimentary knowledge of basketry is present. Dwellings are exclusively in natural caves, and burials are in the same places. Dancing and singing are the expressions of the art impulse. These are the greatest common cultural factors of all the ancient Canarians and probably represent the status of the earliest invaders of the archipelago.

The second cultural stratum includes the cultivation of barley and the making of pottery, the construction of dry-masonry huts, the development of tribal organization and of warfare, athletic sports, and the conception of a supreme being. The only islands which lack any of the elements of this second cultural stratum are Gomera, Hierro, and La Palma — the outlying members of the group. The inhabitants of Hierro may not have made pottery. Bontier and Le Verrier state that "they had plenty of grain of all kinds," but Galindo denies that they had any cultivated cereal. They also had no tribal organization, but were governed by one paternal ruler, and possibly as a result of their lack of tribal subdivision they were without weapons and had no knowledge of warfare. It does not appear that they indulged in athletic sports. They possessed only two or possibly three of the seven cultural elements of the second stratum.

The inhabitants of La Palma knew no agriculture and lived only in caves. They had pottery and five of the seven cultural elements of the second stratum. Division into social classes probably implies the presence of dominant and subject racial elements. The cultural

TABLE 1. Distribution of Cultural Features

Features common to all seven islands

1. Domesticated goat, sheep, pig, dog
2. Fishing
3. Stone-working
4. Bone-working
5. Wooden spears
6. Skin garments
7. Cords, mats
8. Cave dwelling
9. Cave burial
10. Mummification
11. Dancing, singing

	Tenerife	Gran Canaria	Gomera	Hierro	La Palma	Fuerteventura	Lanzarote
Features common to six islands							
12. Pottery	1	1	1	?	1	1	1
13. Cultivation of barley	1	1	1	1 (?)	0	1 (?)	1
14. Dry-stone huts	1 (?)	1	1 (?)	1	0	1	1
15. Chiefs, tribal organization	1	1	1	0	1	1	1
16. Warfare	1	1	1	0	1	1	1
17. God of the heavens	1	1	?	1	1	1	1
18. Athletic sports	1	1	1	?	1	1	1
Features common to five islands							
19. Capital punishment	1 (?)	1	?	1	?	1	1
20. Kingship	1	1	?	1	?	1	1
21. Tribal council	1	1	1 (?)	0	?	1	1
22. Priests, priestesses	1	1	?	1	?	1	1
Features common to four islands							
23. Nobles, commoners	1	1	?	0	?	1	1
24. Evil spirit	1	1	?	?	1	1	?
25. Divorce	1	1	?	?	?	1	1
26. Swimming	0	1	1	?	?	1	1
27. Despised castes	1	1	?	0	?	1	1
Features common to three islands							
28. Monogamy	?	1	?	1	?	1	0
29. Whistling language	1 (?)	0	1	1	0	0	0
30. Alphabetic inscriptions	1	1	0	1	0	0	0
Features common to two islands							
31. Infant baptism	1	1	0	0	0	0	0
32. *Jus primae noctis*	1 (?)	1	0	0	0	0	0
33. Wife-lending	0	1 (?)	1	0	0	0	0
34. Polished stone celts	0	1	1	0	0	0	0
Features peculiar to one island							
35. Polygyny	1 (?)	0	?	0	0	0	0
36. Polyandry	0	?	0	0	0	0	1
37. Female infanticide	0	1 (?)	0	0	0	0	0
38. Bride fattened	?	1	?	?	?	?	?
39. Cultivation of wheat	0	1	0	0	0	0	0
40. Use of sling and pellet	0	0	1	0	0	0	0
41. Pottery stamps	0	1	0	0	0	0	0
42. Painted pottery	0	1	0	0	0	0	0
43. Idols	0	1	0	0	0	0	0
44. Goddess	0	0	0	1	0	0	0
45. Trepanation	1	0	0	0	0	0	0
Total of cultural features	31	39	23	21	17	29	27
Per cent	68.9	86.7	51.1	46.7	37.8	64.4	60.0

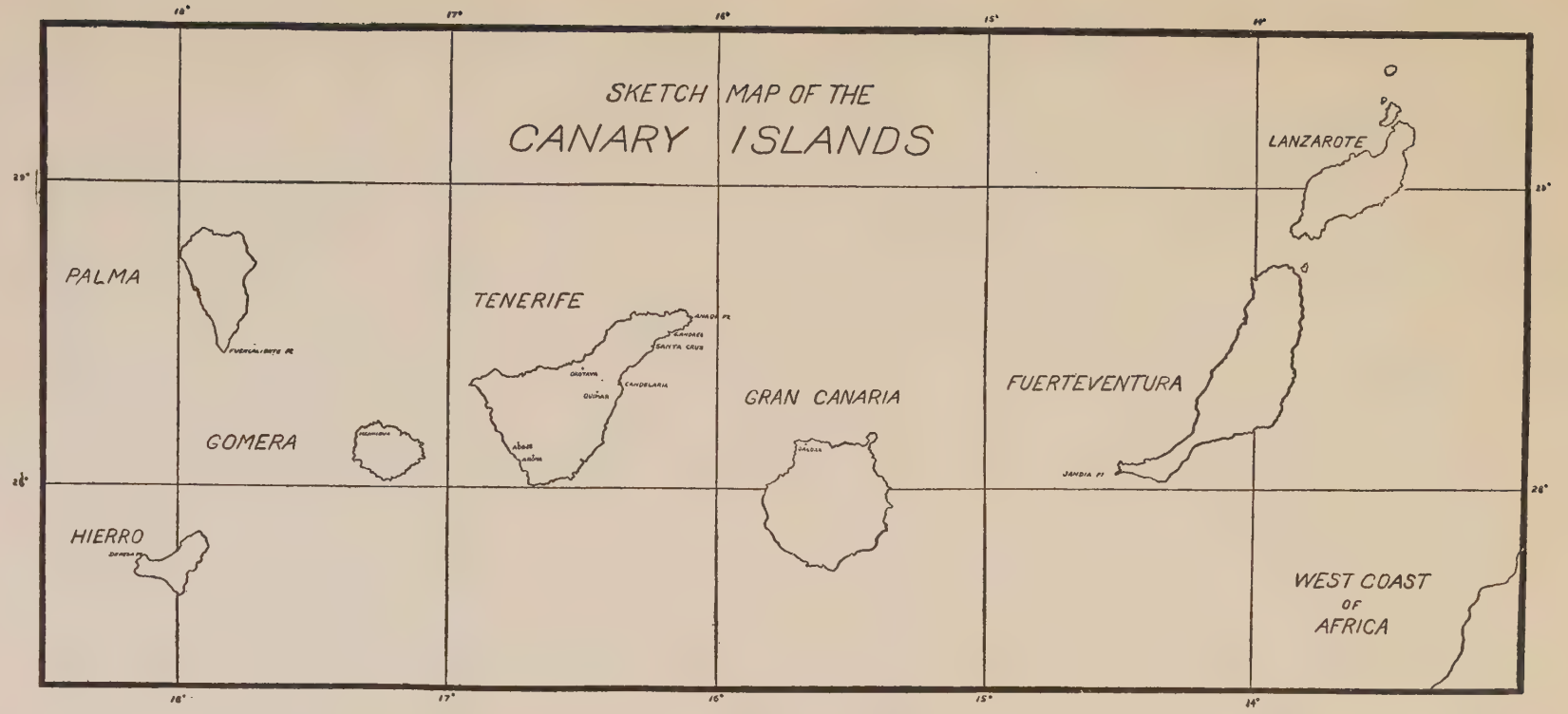
SKETCH MAP OF THE
CANARY ISLANDS
PALMA
TENERIFE
GOMERA
HIERRO
GRAN CANARIA
FUERTEVENTURA
LANZAROTE
WEST COAST
OF
AFRICA
18°
17°
16°
15°
14°
29°
28°

FIG. 1

elements limited to five or four islands are, with the exception of swimming, features of social and religious organization. The reported lack of many of these features may be due to faults in our record. But it is stated positively that the inhabitants of Hierro had no social classes and no tribal council, and that the Guanches of Tenerife could not swim.

Of the remaining features that are confined to three, two, or one of the islands, the majority are not particularly significant as criteria of cultural status. Alphabetic inscriptions thought to be Numidian are found in Gran Canaria, Hierro, Tenerife, and possibly in Fuerteventura. But there is no particular reason for supposing that they are the work of the inhabitants of the islands, especially since there are no references in the early writers to the existence of writing among any of the natives. Non-alphabetic rock scratchings occur in all the islands. Three polished stone celts have been found in Gran Canaria, and one in Gomera. These are of chloromelanite or some similar green stone, and since no deposits of these rocks are known to occur in the islands it is probable that they are importations and represent foreign contact rather than native industry. Pottery stamps and figurines are indications of a superiority in ceramic art in Gran Canaria, which are confirmed by the greater variety and better quality of the pottery in this island. The other features peculiar to single islands are due to environmental and racial factors and will be discussed under the treatment of the individual cultures of the various islands.

LANGUAGE

The early Spanish writers, such as Galindo and Espinosa, were of the opinion that the languages of the ancient Canary Islanders were akin to those of the Berber- and Arabic-speaking tribes on the mainland. Glas endeavored to show that the closest affinities of Guanche speech were with the Shluh dialect of the Berbers of Southern Morocco.[1] Sabin Berthelot tried to prove that Canarian speech in all the islands was related to Berber, on the basis of similarity of proportions of words with certain initial sounds.[2] The Marquis of Bute was impressed by Aryan analogies to the speech of the Guanches of Tenerife,[3] and in this view he was supported by Sir Clements Markham.[4] Lord Abercromby has recently made a careful analysis and comparison of the existing words of the ancient Canarians with Berber and Arab dialects, and concludes that Canarian speech is a lineal descendant of some dialect of Proto-Libyan.[5] Since the present writer is linguistically incompetent to make any contribution to this discussion, a brief résumé of Abercromby's scholarly article must suffice. The latter author divides Canarian words into three classes. Class I comprises words nearly all of which are thoroughly Berber in form and meaning. Class II contains

[1] Galindo, op. cit., pp. 172–180.

[2] P. Barker-Webb and S. Berthelot, op. cit., vol. I, pp. 207–235.

[3] John, Marquis of Bute. On the ancient language of the natives of Tenerife, London, 1891.

[4] Espinosa, op. cit., introduction, pp. xviii–xxvi.

[5] J. Abercromby, A Study of the Ancient Speech of the Canary Islands, Harvard African Studies, Cambridge, Mass., 1917, vol. 1, pp. 95–129.

words doubtfully related to Berber. Class III includes words seemingly inexplicable by modern Berber. In all the islands words are found which contain the non-Berber sound of P, which may represent an older stage of Berber. The following table of the distribution of words according to classes and islands is taken from Abercromby.[1] It seems worth while to subject it to a statistical analysis, and to elaborate it for this purpose.

TABLE 2. Distribution of Canarian Words by Islands and by Linguistic Affinities (After Abercromby)

	Class I (Berber)	Class II (Berber?)	Class III (Non-Berber)	Arabic	Spanish	Total	P-Words
Lanzarote, Fuerteventura							
Number	6	1	16	6	1	30	9
Per cent	20.0	3.3	53.3	20.0	3.3	13.8	15.0
Gran Canaria							
Number	6	14	17	5	0	42	6
Per cent	14.3	33.3	40.5	11.9	0	19.3	10.0
Tenerife							
Number	12	8	53	6	1	80	20
Per cent	15.0	10.0	66.2	7.5	1.2	36.8	33.3
Gomera							
Number	0	0	6	3	0	9	20
Per cent	0	0	66.6	33.3	0	4.1	33.3
Hierro							
Number	5	3	6	2	0	16	4
Per cent	31.2	18.8	37.5	12.5	0	7.3	6.7
La Palma							
Number	12	8	19	1	0	40	1
Per cent	30.0	20.0	47.5	2.5	0	18.4	1.7
Total							
Number	41	34	117	23	2	217	60
Per cent	18.9	15.7	53.9	10.6	0.9		

In the table above, the rows show the number of words of each class in the several islands and the percentage of the extant vocabulary of each island in each class. At the bottom are shown the total of words of each class and the percentage of the words of each class in the total extant vocabulary. At the right are shown the number of P-words for each island and the percentage of the total P-words found there. When an island shows a larger percentage of words of a given class than the percentage of the total vocabulary which that class represents in all the islands, there may be said to be a positive association between that class of word and the island dialect in which the excess is shown. Similarly in any island a percentage less than the total class percentage indicates a negative association.

If the validity of Abercromby's linguistic classes is admitted, our table makes it possible to arrive at some idea of the linguistic differences between the several islands, assuming that

[1] Op. cit., pp. 122, 126.

the vocabularies extant represent a random sample of the various Canarian dialects. If the Berber words of Class I and the words of doubtful Berber affinity in Class II be combined, it is clear that the Berber element in the language was largest in Hierro and La Palma with 50 per cent of the total words extant in this category, and in Gran Canaria with 47.6 per cent of words of probable or possible Berber origin. Lanzarote and Fuerteventura show only 23.3 per cent of Berber words, Tenerife 25 per cent, and Gomera none at all. But only 9 words, aside from the P-place-names, have survived from the dialect of this island.

Again, the maximum proportions of Class III words, which are inexplicable by Berber, are found in Tenerife with 66.2 per cent and in Gomera with 66.6 per cent, while relatively the fewest of this class occur in Hierro with 37.5 per cent, and in Gran Canaria with 40.5 per cent. Evidently all the islands show a very strong linguistic sub-stratum of these Class III words. Arabic words are most common in Fuerteventura and Lanzarote with 20 per cent, in Gomera with 33.3 per cent — but here our total vocabulary is only 9 words — in Hierro with 12.5 per cent, and in Gran Canaria with 11.9 per cent.

Abercromby states that P does not represent a sound proper to any Berber dialect except Zenaga, and in Zenaga it occurs only in some special cases. The same is true of most Hamitic tongues although the sound occurred in ancient Egyptian and in Coptic and is found in Hausa and in a few West Libyan words. But certain place names in which this sound occurs are assigned by Ptolemy to Tingitana and to Mauretania Caesarensis. From 57 to 60 such P-words occur in the Canarian vocabularies. I have used the maximum number as the basis of the percentages in the table. All of these are place names or proper names except four. Because this sound occurs in the names of kings, nobles, and places of royal residence, and probably in formulae used at the coronation of Tenerife kings, Abercromby thinks that a P-language was used by the upper classes in Tenerife and probably by the whole population. Certain grammatical similarities to Berber found in the P-language lead him to the conclusion that this speech represents a predecessor of Berber.

The right-hand column of Table 2 gives the number of such words and the percentage of the total of P-words contributed by each island. If we compare these percentages with the percentage of the total non-P-vocabulary contributed by each island, given in the second column from the right, we are enabled to judge of the relative importance of P-words compared with those in which this sound does not occur. Tenerife contributes 36.8 per cent of the total non-P-vocabulary, but 33.3 per cent of the P-words. Gomera contributes only 4.1 per cent of the total vocabulary, but 33.3 per cent of the P-words. La Palma, which contributes 18.4 per cent of the whole non-P-vocabulary, has only one P-word or 1.7 per cent of the total. It appears that Gomera was the stronghold of the P-language, with Tenerife next in order.

At a later stage of our investigation an attempt will be made to correlate this evidence of linguistic strata with the various physical and cultural elements which may be distinguished in the islands. It should be noted, however, that the analysis of the distribution

Santa Cruz de Tenerife

Santa Cruz de Tenerife from the Laguna Road

NATIVE TENERIFE CHILDREN

Aqueduct and Barranco, Tenerife

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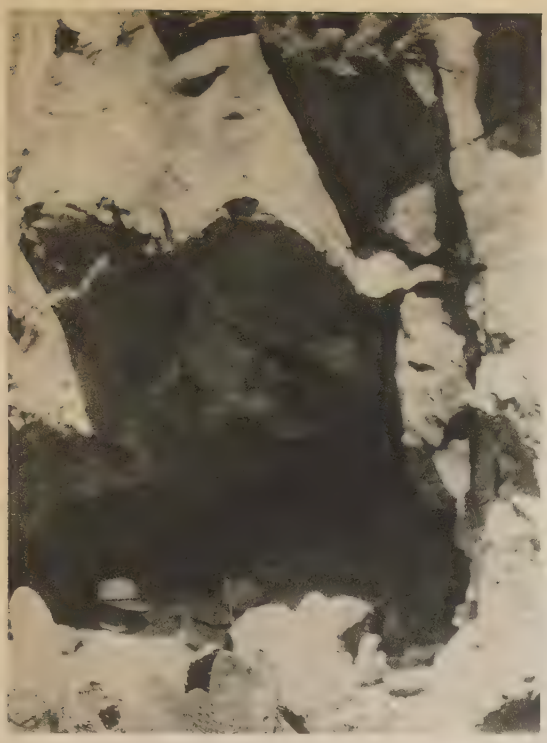


FIG. 1. ENTRANCE TO BURIAL CAVE, BCO. BARANDA, TENERIFE

FIG. 2. BURIAL GROTTO NEAR HOYA GRANDE, TENERIFE

FIG. 3. NORTHEAST COAST OF TENERIFE AT DAWN

HELIOTYPE CO. BOSTON

FIG. 1. IRRIGATION TERRACES NEAR SANTA CRUZ DE TENERIFE

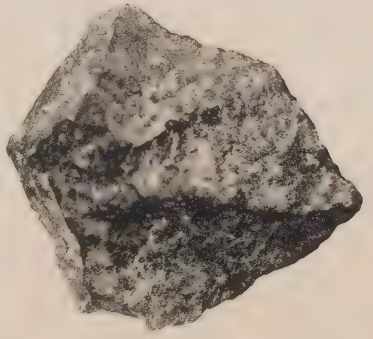


FIG. 2. FLAKE FROM A BURIAL CAVE NEAR SAN ANDRES, TENERIFE

FIG. 3. EXCAVATING AT THE MOUTH OF A CAVE IN BCO. DE LAS HIGUERAS, CHORILLO, TENERIFE

of word classes made above is subject to very strong reservations, first because it depends upon the assumption that Abercromby's classifications and identifications are admissible, and second because of our assumption of the representative character of the extant samples of Canarian vocabularies.

Professor Leo Wiener, who has been studying Arab influences upon African languages and cultures for a number of years, has kindly pointed out to me that certain Guanche words seem to be of Mandingo, or more properly, Mandé origin. George Glas remarked that the word *mencey* is closely similar to *mensa*, "which in the language of the Bambara, or Mandingo blacks, signifies a King." [1] Professor Wiener confirms this statement and informs me that the Mandé languages are substantially Negrified Arabic with Negro grammar and syntax and vulgar Arabic vocabulary. He adds that he finds in certain Guanche words evidence of Arabic origin modified by Mandé Negro influences. He is inclined to believe, therefore, that the Canary Islands must have been reached at some time not much before the eleventh century by a group of invaders who spoke a debased and Negrified Arabic and who came from the mainland somewhere between the Atlas and the Sudan.

[1] Op. cit., p. 180.

CHAPTER II

SOCIAL ANTHROPOLOGY AND ARCHAEOLOGY OF TENERIFE

CUSTOMS OF THE GUANCHES

A RÉSUMÉ of the ethnographic features of the Guanches of Tenerife has been given in the general ethnographic outline. I propose to deal here with some of their customs which may afford evidence as to their racial, ethnic, and cultural affinities.

Social classes among the Guanches were very clearly distinguished. Espinosa says:

> Among these people there were nobles, knights, and peasants, and each one was esteemed according to the quality of his person. They called the nobles *Achimencei*, the knights *Cichiquitzo*, and the peasants *Achicaxna*. The lord was called *Mencey*, and hence the nobles, as descendants of lords, were called *Achimencei*, for *Quebehi* was as much as to say Highness. The natives held that God had created man from earth and water, so many men, and so many women, and that the flocks had been given to sustain them. Afterwards he created more men, but did not give them flocks. Praying to God for flocks, He answered and said to them, "Serve those others, and they will give you to eat." From these came the peasants, who served, and were called *Achicaxna*.[1]

This passage implies a flock-owning aristocracy and a racially distinct peasantry. It is highly reminiscent of the class distinctions so sharply drawn in the Hamitic field and also of the position of the Fulah among the Negroes of the Sudan. The Guanche nobles attempted to preserve a pure line by practicing endogamy, and of the king or lord Espinosa says: " The lord did not marry with anyone of the lower orders, and if there was no one he could marry without staining the lineage, brothers were married to sisters." [2]

Espinosa and Galindo agree that some of the inhabitants of the island were fair and others dark and it is extremely probable that social lines followed this racial division, although it is cited by Espinosa as a topographical distinction between the people of the north and those of the south. It seems probable too that the flock-owning aristocracy was the blond element and that the peasantry was gathered from the small brunet and more brachycephalic element, from the fact that the blonds were said to be on the northern side of the island, which includes Laguna and the Vale of Orotava and all of the more pleasant and fertile areas of the island. Furthermore one cannot help being influenced by the fact that the tall, blond, pastoral people have almost invariably established themselves as military overlords of the people with whom they have come into contact throughout the Old and New Worlds. That the brunet population should be larger toward the south of Tenerife is natural when one considers, on the one hand, the aridity and relatively undesirable char-

[1] Espinosa, op, cit., pp. 37–38.

[2] Espinosa, op. cit., p. 37.

acter of that part of the island and, on the other, its proximity to Gomera and Hierro where the people were darker.

The kingship. The succession to the kingship in Tenerife is significant. Espinosa relates that for many years the inhabitants of the island were subject to a single lord who reigned at Adeje. When he was old each of his nine sons seized upon a part of his territory and made a lordship for himself.

> It is to be noted that, although these lords inherited from and succeeded their father, their descendants did not do so. For the rule of succession they had was that the succession of two lords was not from fathers to sons; but if the reigning lord had brothers, although he had sons, the sons did not inherit, but the brother, and if he died, the next brother, and so on until there was no brother left. Then the inheritance of the lordship went to the eldest son of the first heir, and so, from one to the other, the succession was continued.[1]

Espinosa, Galindo, and Viana all agree also that the kingship was elective. There is evidence here of a transitional stage between the inheritance of the kingship through the maternal line and its replacement by paternal descent. Frazer has shown that in many countries the kingship has continued to be inherited through the female line even after paternal descent is well established in the population at large.[2]

In Ashantee the kingdom descended in the female line to the king's brothers and afterwards to the sons of his sisters in preference to his own sons.[3] For this reason the paternity of the future king was a matter of indifference and sisters of the reigning monarch were free to intrigue with any strong and handsome man. Similar license was permitted to the queen dowager and the queen sister in Uganda, but they were not allowed, under pain of death, to bear children. Frazer explains this on the supposition that the kingdom had formerly descended first to the king's brothers and next to the sons of his sisters. When the line of descent was changed from the female to the male line the king's mothers and sisters were then forbidden to bear children lest the descent of the crown to the king's own children should be endangered. He further surmises that the practise of putting the king's brothers to death, which survived till Uganda passed under British protection, was instituted at the same time as the prohibition of child-bearing laid upon the king's mother and sisters.[4]

The succession of the king's brothers to the lordship in Tenerife cannot be satisfactorily explained except by the hypothesis that the descent was in the female line. The statement that, in Tenerife, in default of brothers the eldest son of the king inherited may be correct, if, as Espinosa says, the king sometimes married his sister. Otherwise we should expect the sister's son, the king's nephew, to inherit. The transition to the male descent of the king-

[1] Espinosa; op. cit., p. 36–37.
[2] J. G. Frazer, The Golden Bough: The Magic Art and the Evolution of Kings, London, 1911, vol. 2, pp. 266–323.
[3] Frazer, op. cit., p. 274, citing A. B. Ellis, the Tshi-speaking Peoples of the Gold Coast, p. 297.
[4] Frazer, op. cit., pp. 275–276.

ship may equally be indicated by this. It is at least unmistakably implied by the statement that the sons of the ruling soverign, contrary to the law of succession, seized each a part of the father's kingdom for his own inheritance. That the kingship should have been both hereditary and elective is perfectly possible. Frazer points out that in many African tribes at the present day the kings or chiefs are chosen by the people or by a body of electors from among the members of the royal family. If then it is admitted that the kingship among the Guanches was in a state of being transferred from maternal descent to paternal descent at the time immediately preceding the conquest, we may ask whether this change is to be regarded as a consequence of the natural desire of a father that his own sons rather than his brothers' or his sisters' sons inherit, or if it may be rather an evidence of the attempt on the part of an invading military caste to convert a native dynasty into a dynasty of their own race by changing the rules of succession. When Canute the Dane seized the throne of England he secured his position by marrying the widow of his predecessor, Ethelred, whom he had dislodged and whose children he had driven into exile. Similar customs seem to have prevailed among the Saxons.[1] The marriage of sisters by the lords of Tenerife was probably practised for the same reason although Espinosa states that the object of such incestuous alliances was to preserve the purity of the royal strain. If we assume that the earliest population of Tenerife was a brunet stock closely akin to the peoples found in Gomera and Hierro — and this is for several reasons a justifiable assumption — it is probable that the lordship of the island originally descended through the female line in these aborigines; for evidence will be adduced later pointing to the prevalence, or at any rate to the existence, of maternal descent in Gomera and probably in Hierro. However, there are no clear indications to be deduced from ancient sources or modern archaeological data that the blond people of Tenerife came as an invading group. Nor are there any statements in the early writers indicating that the peasantry was exclusively brunet while the nobility was blond. It does not seem possible to proceed beyond the establishment of probabilities where historical data are so meagre.

Viana describes the coronation of the king as follows:

Guardaba cada Reyno con recato
La calavera, para el propio efecto,
Del mas antiguo Rey de aquel estado
Del cual linaje y sangre descendiese.
Aquel que por entonces se elegia,
Y juntos en el puesto de consulta,
Que en su lengua llamaban el Tagóro,
Sacabanla con suma reverencia,
Y luego el nuevo Rey, que se juraba,
La besaba, y encima su cabeza
Poniendola decia estas razones:

[1] Frazer, op. cit., pp. 282–283.

"Achoron, Nunhabec, Zahonat Reste,
Guañac Sahut Banot Xeraxe sote,"
Que decia, Yo juro por el hueso,
Que tuvo Real corona de imitarle,
Guardando todo el bien de la República.
Luego todos los grandes, prefiriendo
Al mas anciano, de por si, tomaban
La propia Calavera y la ponian
Con gran respeto sobre el hombro diestro
Besandola, diciendo muy humildes:
"Angoñec Acarom Ynac Zahaña
Guañoc Reste Mencey," que significa
Juro por aquel dia celebrado
De tu coronacion de ser custodia
De nuestro Reyno y Rey tu descendiente.[1]

And further:

Y la corona era una guirnalda
De laurel, palma y flores olorosas,
Y el cetro real un hueso largo y seco
Del propio Rey antiguo, de quien fuese
La calavera, con que fué jurado.
Era el mondado hueso Zancarronico
Y cubierto de pieles gamuzadas,
Y al Rey presentaba solamente
Cuando en consulta en el Tagóro estaba.[2]

Espinosa bears witness to the same custom but without specifying that a skull was used for the coronation and a long bone for the sceptre.

When they raised one to be lord they had this custom. Each lordship had a bone of the most ancient lord in their lineage, wrapped in skins and guarded. The most ancient councillors were convoked to the *Tagoror*, or place of assembly. After the election the King was given this bone to kiss. After having kissed it he put it over his head. Then the rest of the principal people put it over his shoulder and he said, '*Agoñe yacoron yñatzahaña chacoñamet*' (I swear by the bone on this day on which you made me great).[3]

An interesting parallel to this custom is found in the Hamitic-Negro kingdom of Uganda. Five months after the king had died, his head was severed from his body, and the lower jaw-bone was removed and ceremonially cleaned. It was then wrapped in bark cloth decorated with beads and cowry shells and put into a conical wooden vessel also wrapped in bark cloth. The umbilical cord of the king also had been preserved. Then a temple was built for the reception of these two objects, and the more important officials of the late king and some of his widows went to live near the enclosure. Once during his reign the king visited the temple of his father containing the jawbone and umbilical cord, and upon his return

[1] Viana, op. cit., p. 29. [2] Viana, op. cit., p. 30. [3] Espinosa, op. cit., p. 37.

hundreds of people were caught, taken to the sacrificial place, and put to death to join the ghost of the dead king. Jawbones of kings and important men were carefully preserved because it was thought that the ghost clung especially to this bone and that the possession of it would bring good luck.[1]

One of the ceremonies in connection with the coronation of a new king was a visit to the temple of Budo, where he and the queen were handed the jawbone and umbilical cord of Lumansi, father of the fourth king of the long Uganda dynasty embracing about thirty-two generations. The priest then said, " You are the king."

In Uganda the royal family was of non-Negroid origin, probably Galla, and seems to have come in from the north or the northeast.[2] The invaders subdued the Negro aborigines and organized the kingdom. Although the women never ruled, the succession was in the female line and the reigning prince had to be the son of a Muganda (Negro) woman. The royal family was Bahima (Hamitic-Negroid), but none of the princesses were permitted to marry or to have children. The king, however, married one of his sisters, who became the ruling queen but was not allowed to bear children. The king's brothers were eligible to the throne, but their sons were not. In Tenerife the royal family and the aristocracy probably belonged to an invading light-complexioned caste which had dominated a smaller brunet people. Perhaps — indeed probably — the mother of the heir apparent came from the brunet stock originally, for the brothers of the king were next in line of succession. But as in Uganda, the sons of the king, and not the sons of the king's brother, were next in line to the kingship. In Tenerife as in Uganda the king sometimes married his sister, and this practise may have been a device to transfer the succession to the blond aristocracy, thus eliminating the conquered brunet people from the dynasty. Both invading dynasties were pastoral people primarily and in both the succession to the kingship involved certain ceremonies connected with the skull of an early member of the dynasty.

This is no attempt to prove that the ruling class in Tenerife was Bahima or that the Guanches were, in part, of Galla origin. It is merely an attempt to show that some of the features of the Guanche kingship were markedly similar to those in vogue in a far distant place where pastoral invaders of Hamitic origin established among Negroes one of the most successful of African native states.

General resemblances to ancient Germans. Some of the other customs of the Guanches recall, as do their physical characteristics, the Germans of Tacitus. Among the ancient Tenerifians, as among the Germans, the virtue of woman was held in very high esteem and the women accompanied their husbands when they went to war. Both peoples were devoted to warfare and to athletic conquests and, more remarkably, were addicted to personal cleanliness. Galindo says: "The natives of Tenerife were very neat and cleanly; they

[1] John Roscoe, The Baganda, London, 1911, pp. 110–113, 282.
[2] But perhaps they were Fulah and came from the northwest.

washed their hands and faces whenever they arose from sleep, or when they sat down to eat, and after they had eaten.[1]

Compare with this the account of Tacitus:

> Statim e somno, quem plerumque in diem extrahunt, lavantur, saepius calida, ut apud quos plurimum hiems occupat. Lauti cibum capiunt. . . .[2]

One would hardly select such a parallelism as a ground for alleging racial identity or relationship, but the custom of daily washing in an arid country is almost as striking as in a cold country. Of course the Guanches may have washed in sea water, but they were not swimmers and the Tenerife coast line is so rugged as to offer no good facilities for bathing. Bodily cleanliness is not so common among primitive peoples as to constitute an ethnologically insignificant habit.

It would be quite possible to extend this comparison of the Guanches and the ancient Germans to many of their customs and characteristics. But our information regarding both peoples is scanty and, although many points of similarity could be adduced, they are scarcely of such a character as to constitute evidence of relationship.

ARCHAEOLOGICAL REMAINS

Pottery. The pottery found in the Guanche burial caves of Tenerife was made without the use of the wheel and is, generally speaking, indifferently well baked. In this latter respect, however, the Guanche pottery is a distinct improvement upon the modern Tenerife handmade ware of San Andres and Laguna. There are some few examples of Guanche pottery in the Museum of Santa Cruz de Tenerife which are made of very thin and well-baked ware, but in the majority of instances it is thick and friable. Some of the thin pieces have evidently been polished with a bone polisher. The color of the pottery varies from pale yellow through dark, reddish brown to black. The color is usually distributed very unevenly and there is no slip.

The pottery of the Canary Islands has recently been dealt with by Lord Abercromby,[3] and the present survey is based upon measurements and drawings of the specimens in the Santa Cruz Museum supplemented by photographs kindly furnished by Lord Abercromby.

Tenerife pots almost invariably have round or conical bottoms. The only flat-bottomed vessel that I have seen is No. 13 (Plate 21, fig. 9) which is supposed to have been found in the neighbourhood of Icod, " en el Malpais." I am inclined to think that this label may be incorrect and that the specimen came from Fuerteventura, where flat-bottomed vessels are common,especially a type ornamented as is this with vertical incised lines in groups of three.

[1] Galindo, op. cit., p. 150.

[2] Tacitus, Germania, chap. 22, 1–3.

[3] John Abercromby, The Prehistoric Pottery of the Canary Islands and its Makers. J. R. Anthrop. Inst., London, 1914, vol. 44, pp. 302–323.

All of the shapes are plain conical or rounded bowl cooking-pot shapes except No. 5 (Plate 7, fig. 6), which has shoulders and a constricted opening and is of doubtful origin. In this connection it should be mentioned that there are also small drinking cups, hemispherical in shape, with beaks. In general the shapes are asymmetrical.

The typical Tenerife pot has a solid cylindrical handle set vertically at the very edge of the opening (No. 19, 24, Plate 7, figs. 7–9). Sometimes this handle is not upright but sloping (No. 18, Abercromby 106). These handles are generally oval in cross section and from 5 cm. to 7 cm. long. In some instances the handles are hollow, so that a combined spout and handle is formed (No. 25). There is also a type of pot which has two hollow spout handles set opposite each other slightly below the rim of the pot and sloping upward. Two globular vessels from Guimar (No. 10, No. 11, Plate 7, fig. 10) have solid cylindrical handles, two on each pot, set horizontally just above the zone of greatest circumference. Still other pots have solid lug handles. These are found on the conical pots and are attached opposite each other just below the rim (No. 4, No. 7).

Very few Tenerife pots of Guanche manufacture are ornamented. Frequently the rims of pots are milled and occasionally there are a few incised lines by way of decoration. No. 28 (Plate 7, fig. 12) is ornamented with incised diagonal lines and a small boss. The bottom is covered with finger-nail imprints. No. 29 (Abercromby 99) is a drinking cup with a simple incised band below the rim, consisting of alternating groups of horizontal and vertical lines. No. 2 (Plate 9, fig. 6) has a single deeply incised festoon on its shoulder. Abercromby figures one pot in the Santa Cruz Museum (Abercromby 101) which he says is attributed to Tenerife, although he is inclined to believe that it comes from Fuerteventura. He is correct in his supposition, for the pot really comes from " Casillas del Angel", Fuerteventura, and in no way resembles any of the Tenerife types. It should be noted also that a wooden bowl with a slab handle (Plate 7, fig. 4, Abercromby 98), attributed by that author to Tenerife, is actually labelled " Gomera." Abercromby No. 95, which is a shallow bowl ornamented with vertical lines dropped from a single horizontal line that encircles the vessel, cannot be identified with any of the pots in the Santa Cruz Museum labelled " Tenerife." It has been found, however, to be identical with No. 43 from Fuerteventura. The incised design is one that is typical of Fuerteventura pottery. No. 5 (Plate 7, fig. 14) is a pot labelled Usiame, Guia, Tenerife, but it seems more than possible that the label is incorrect and that it is a Fuerteventura pot. Its ornament of grouped vertical lines and its shape, conical with upper parts of walls converging inward, strongly suggest Fuerteventura.

Of some 31 more or less complete Guanche pots from Tenerife in the Santa Cruz Museum, only five are ornamented at all, aside from the milled rims. Of these five, three are somewhat dubious in origin. It can be stated with some degree of certainty that the Guanches of Tenerife did not usually decorate their pottery.

POTTERY FROM TENERIFE, GOMERA, (No. 4), AND FUERTEVENTURA (Nos. 2, 3)

(From Photographs of Lord Abercromby)

Courtesy of the Royal Anthropological Institute

Comparison of Tenerife Pottery with that from the other Islands. There is no pottery from Hierro in the Santa Cruz Museum nor in the museums of Santa Cruz de la Palma and Las Palmas. Abercromby does not mention the pottery of Hierro; though specimens may exist they have not thus far proved available for observation. In the Museum of Santa Cruz are three pottery bowls from Gomera and three wooden saucepans. The bowls are undecorated, without handles, and are indistinguishable from Tenerife ware.

Lanzarote pottery is also very scarce. Abercromby describes no specimens and there are none in the Museum of Santa Cruz de Tenerife. There are, however, in that museum many potsherds from Lanzarote, most of which are decorated with incised lines. The patterns are reminiscent of those found in Fuerteventura and Gran Canaria, consisting for the most part of hatched bands, combinations of grouped vertical and horizontal lines, zig-zag and tectiform patterns.

Fuerteventura pottery differs from Tenerife ware in shape and in the presence of certain ornamental motives. The typical Fuerteventura pot is a large conical vessel with the upper parts of the walls converging. Ornament generally consists of vertical lines dropped from a horizontal encircling the pot somewhat below the rim. Occasionally these conical pots have raised necks. A variant of this type is a globular bowl with round or flat bottom. Most distinctive are the bowls with noses or beaks. The sides of these noses are perpendicular to the broad sloping surface which forms the floor of the trough. In the Canary Islands this type of pot is peculiar to Fuerteventura. Decoration of this type often " takes the form of festoons from which line-groups depend and form compartments." [1] (Plate 21.)

In Fuerteventura are also found large flat-bottomed flagons with strong loop handles (Plate 21, fig. 13). These occur too in Gran Canaria.

Gran Canaria presents the greatest variety of pottery of the group. Most of the vessels have handles, some spouts, others lids. Some of the ware is red-faced and ornamented with painted designs. There are many sharp-angled forms which are probably copied from models in stone or metal (Plate 15). The only point of contact with Tenerife ware lies in the spout handles. The painted triangle designs found on pottery from this island are typically Berber.

Almost all La Palma pottery is bowl-shaped. (Plate 20.) Abercromby figures seventeen vessels, the majority of which are profusely ornamented. Incised lines, punctuated ornament, semi-circular lines, and impressed ornament all exist. The patterns are quite distinct from those of the other islands and are often very artistic. It will be remembered that the bowl shape is one common to all the islands.

In general it may be concluded that the Guanche pottery of Tenerife displays no very close affinity with the pottery of any of the other islands except perhaps Gomera. The shapes are crude; ornament is almost unknown. The evolution of pottery types in the

[1] Abercromby, op. cit., p. 312.

different islands implies a very considerable isolation and possibly racial differences; unquestionably Gran Canaria and Fuerteventura were subjected to mainland influences. But these are points which will be taken up elsewhere.

Descriptive Notes and Measurements of Tenerife Pots in the Museum of Santa Cruz de Tenerife

Measurements in order on each pot are height, diameter of opening, maximum circumference

Number	Measurements	Locality	Remarks
1.	46.5 cm. 6.4 cm. 75.2 cm.	No label	Yellow, probably Spanish
2. (Abr. 115) (Plate 7, fig. 6)	29.5 cm. 14.0 cm.	No label Fuerteventura?	Yellowish, flat bottom, incised festoon, hole in each side
3. 503	26.6 cm. 19.5 cm. 82.5 cm.	Tenerife	Dark reddish brown bowl, round bottom
4.	22.4 cm. 16.8 cm. 66.3 cm.	Arona, Tenerife	Light reddish brown, conical bottom, solid lug handles
5. (Abr. 114) (Plate 7, fig. 14)	24.5 cm. 17.0 cm. 66.1 cm.	Usaime, Guia, Tenerife, Fuerteventura?	Dark reddish brown, conical bottom, upper part of walls converging, incised lines
6. 516	11.7 cm. 13.8 cm.	Guayero, Arona, Tenerife	Light red brown, conical bottom
7. (Abr. 105)	13.5 cm. 15.5 cm. 53.7 cm.	*En la Aldea de San Miguel*, Tenerife	Clear brownish red, conical bottom
8.	14.8 cm. 15.7 cm. 54.2 cm.	Adeje, Tenerife	Yellowish, almost black, conical bottom, may have had handle, very thin ware
9.		Tenerife	Same type, rounder bottom, darker color
10.	23.0 cm. 19.5 cm. 82.0 cm.	Guimar, Tenerife, *En Fetapodon*	Dark red brown, round bottom, solid horizontal handles
11. (Abr. 97) (Plate 7, fig. 10)	12.3 cm. 11.2 cm. 50.8 cm.	Guimar, Tenerife	Same type, nearly black, broken handle
12.	about 1 m. high	Tenerife	Fragmentary conical vase, very thick, yellowish, probably Spanish
13. (Abr. 113) (Plate 21, fig. 9)	14.0 cm. 8.0 cm. 41.0 cm.	Icod, Tenerife. *En el Malpais.* Fuerteventura?	Gray, flat bottom, incised vertical line groups
14.	18.7 cm. 12.8 cm. 46.2 cm.	Araya, Candelaria, Tenerife	Lower part yellowish, top black, conical bottom, solid handle broken off
15. (Abr. 111) (Plate 7, fig. 15)	18.0 cm. 13.0 cm. 49.2 cm.	Arico, Tenerife	Same type as preceding, black
16.	16.0 cm. 17.1 cm. 58.8 cm. below rim	Arona, Tenerife	Light red-brown, sharp conical bottom, hollow spout handles, milled rim, thin, well-baked ware

Number	Measurements	Locality	Remarks
17.	17.5 cm. 27.0 cm. 90.0 cm.	Tenerife	Red brown, similar to No. 4 but wider top and rounder bottom, solid lug handles
18. 514 (Abr. 106) (Plate 7, fig. 7)	13.5 cm. 11.9 cm. 45.4 cm. 5.0 cm. handle	Hoya Fria, San Miguel, Tenerife	Light red-brown, solid handle, conical bottom, very crude
19. 515 (Abr. 108)	12.3 cm. 12.7 cm. 47.2 cm.	Cueva de Machin, Arona, Tenerife	Black outside, brown inside, conical bottom, solid handle
20. 518	9.0 cm. 10.0 cm. 37.5 cm.	Cueva de Machin, Arona, Tenerife	Handles broken off, probably two solid handles
21.	11.7 cm. 15.0 cm.	*En los montes en Ucanca*, Guia, Tenerife	Same type, light red-brown, broken handle
22. 511	14.5 cm. 13.6 cm. 53.8 cm. 4.0 cm. handle	No label	Light red-brown, round bottom, handle like No. 18
23.	11.3 cm. 17.7 cm. 59.5 cm. 7.1 cm. handle	*Encontrada a principio de este siglio* xix *en San Miguel de Abona*, Tenerife	Made of wood, even bronze color, polished surface, very large solid sloping handle, proportionately wider opening but same type as above
24. 24 (Abr. 107)	17.0 cm. 16.0 cm. 58.2 cm. 5.0 cm. handle	*En las costas del Granadilla*, Tenerife	Yellowish, conical bottom, upright solid handle, oval in section
25.	13.0 cm. 10.5 cm. 42.6 cm.	Araya, Tenerife	Yellow-red, two crude grooves encircling pot below rim, hollow spout handle
26. 519	6.0 cm. 15.0 cm. 50.0 cm.	Costa del Rio de Arico, Tenerife	Wooden, light gray-brown, Guanche *ganigo*
27. (Abr. 103) (Plate 7, fig. 11)	10.7 cm. 18.8 cm. 63.2 cm.	Arico, Tenerife. *1879 en cueva llamada de Juan Andres*	Yellow brown, conical bottom, milled rim
28. 512 (Abr. 96) (Plate 7, fig. 12)	9.5 cm. 21.0 cm. 69.5 cm.	*Higuera de Indias*, Adeje, Tenerife	Brown, milled rim, small boss below rim, incised lines, finger-nail marks on bottom
29. (Abr. 99)	4.0 cm. 6.5 cm. × 5.8 cm., diameters of rim	Arico,Tenerife	Beaked drinking cup. Yellow, with solid broken handle, incised band below rim
30. (Abr. 100) (Plate 7, fig. 1)	5.0 cm. 5.2 cm. × 9.5 cm. diameters of rim	Arico, Tenerife	Blackish, oval cup, projecting beak
31.	13.2 cm. diameter of rim 7.2 cm. diameter of bottom.	Tenerife Label: *Ganignitos usados por los Guanches como simboles ó signos del compromiso matrimonial, que eran rotos por los sacerdos cuando por alguno de los conjuges se entabla y era llevado a efecto el divorcio entre ellos.*	Four bronze-colored saucers, well polished

There are two small round-bottomed bowls with milled edges and lug handles in the Museum of Villa Benite, Santa Cruz. These are labelled "Orotava."

The chemist, Ramon Gomez, of Puerto Orotava, possesses one pot of the common type with an upright solid handle.

In the summer of 1915 some of the men employed by the expedition to hunt for burial caves in the neighborhood of Guia found a cave containing pottery. They did not consider this pottery worth preserving because it was cracked, and they therefore threw it over the cliff.

Stone objects. *Stone implements and utensils* are made of obsidian, basalt, or lava. The obsidian implements are irregular flakes, chipped, for the most part, on one side only. They were called *tabonas* by the Guanches and were used to cut skins and for various other domestic purposes. They were employed especially in opening bodies for embalming. The best series of these implements in the Santa Cruz Museum comes from Cueva del Tabonato in Realejo Alto, on the west side of the island. These are small or medium-sized flakes, chipped only on one side. One or more edges have been retouched for cutting or scraping. They recall Mousterian forms, without exhibiting any of the regularity of shape or fineness of retouch characteristic of the Palaeolithic industry. Obsidian is not very common in Tenerife, but in the museum *tabonas* are exhibited from Tacaronte, Fasnia, Candelaria, Adeje, and Taganana. One implement from Fasnia recalls in form the Aurignacian beaked burin.

The basaltic implements are scrapers, knives, and perhaps lance heads. Basalt easily chips into triangular prisms and is abundant in Tenerife. One scraper, which I picked up in a plundered burial cave near San Andres, seems to have been detached from a core by a single blow (Plate 6, fig. 2). The under surface is plane and exhibits the original outer face of the rock. It is triangular in shape with a thick base showing the point of percussion. A median ridge extends down to the point and the edges show no traces of use. One would hesitate to call it an implement were it not for the fact that it looks as much like an artifact as any of the scrapers made from this material. Verneau[1] figures a similar flake which he says was frequently used as a spearhead. This type is more or less triangular, chipped, for the most part, on one side only. One of the angles is much sharper than the others and serves as the point of the implement.

The basalt knives are long narrow flakes, triangular in section, and showing no secondary chipping. They give evidence of some skill in detaching flakes. The best examples in the Santa Cruz Museum are from Gomera and Fuerteventura, but this type of implement is also found in Tenerife. The Guanches called stone knives not made of obsidian *tafrique*.

Hammer stones and rubbing stones are made from lava. A variety of forms is exhibited: round, oval, cylindrical, and rectangular with rounded corners. The Tenerife implements are inferior to those from Gomera. One hammer stone has a hole bored partially through

[1] Cinq Années de Séjour aux Îles Canaries, Paris, 1891, p. 33.

FIG. 1

FIG. 2

LAVA GOFIO MILLS FROM TENERIFE AND GOMERA

Courtesy of the Museum of Santa Cruz de Tenerife

the center. In general they exhibit no signs of hafting. Several from Lanzarote are somewhat celtiform. The Guanches of Tenerife did not polish their stone implements, though many of the hammers, pestles, and rubbing stones from the other islands seem to have been ground. Polished stone celts of triangular form have been found in Gran Canaria and Gomera, some made of chloromelanite. These are probably not of Guanche manufacture.

The Guanches are known to have been very adept in the throwing of stones, which was their favorite method of warfare. The old authors tell many tales of their precision of aim and their skill in dodging the missiles.

Mills of Lava. Stone mills or querns, which were employed in grinding barley to make *gofio*, were commonly used by the Canarians in all the islands and are still in use today. (Plate 8.)

The material used is lava, and the mill is shaped by a process of battering and grinding. The simple lower grindstone is roughly circular, with a plane grinding surface and the bottom more or less rough. In the centre of the lower stone is a hole designed to receive a wooden pivot peg which is attached to the upper stone and serves to keep it centered in its revolutions on the nether grindstone. The hole for the pivot peg sometimes pierces the lower grindstone. It is usually larger in diameter at the top than at the bottom.

The upper grindstone may vary considerably in form and is usually more carefully worked than the lower. Most frequently the top is rounded and there is a large hole in the centre, through which the pivotal peg is inserted into the lower grindstone, leaving plenty of room for pouring in the grain. In some of the more elaborate types of mills the upper opening of the hole in the top grindstone is surrounded by a raised rim worked in the lava, and in several specimens in the Santa Cruz Museum this rim has assumed the proportions of a cylindrical neck or collar 3 cm.–8 cm. in height.

Mills from Gomera are more elaborate than those from Tenerife. One specimen has a top shaped like a truncated cone. Several are decorated with grooves radiating from the hole in the top stone toward the periphery.

The smaller mills have depressions in the upper surface of the top stone, designed to receive the tips of the finger and thumb. The mill can thus be rotated by hand. In many of these mill tops the finger and thumb depressions are so far apart that it seems improbable that any woman would have a sufficiently large hand to use them. However, as the number of depressions is sometimes six, it is possible that both hands were used.

Larger mills were commonly rotated by means of an upright handle inserted in a hole in the top of the mill about halfway between the central opening and the periphery. In modern mills a bar of iron is soldered into a hole drilled in the top, but in the older specimens the handle is of wood.

Berthelot figures a large mill from Fuerteventura. The mill is placed in a wooden frame raised above the ground about the height of a table. The mill is worked by means of a

long stick, of which one end is fixed in the top of the mill and the other in a socket at the end of a wooden crane which rises from the framework of the mill. Berthelot also states that the upper end of the handle sometimes worked in the socket of a beam supported against the wall of the house. It is probable that similar devices were used in Tenerife.

In a large mill in the Peabody Museum, which came from a cave near Matanza, Tenerife, rectangular slots are cut in the grinding face of the upper millstone at the opening of the central hole. These slots are two in number and are exactly opposite each other. They are 2 cm. long, 3½ cm. wide, and 1cm. deep. The purpose of these slots is doubtless to provide for the fixation of a piece of wood which extended across the middle of the lower opening of the large hole through which the grain was poured. This cross piece served to support the upright wooden pivot on which the mill turned. Either the pivotal peg was inserted through a hole in this wooden cross piece, or the crosspiece pierced the pivot. This device served to keep the upper grindstone centered, at the same time allowing the hole to be of ample size for the feeding of grain.

The smaller hand-mills have diameters averaging 25 cm. or 30 cm., and the grindstones are 4 cm.–6 cm. thick in the thickest part. The larger mills are 40 cm.–50 cm. in diameter and the stones are as much as 10 cm. thick.

Some of the modern Tenerife stone mills and several of the ancient specimens from Gomera in the Santa Cruz Museum have raised rims round the grinding edge of the nether stone. In such cases the upper stone is smaller than the lower and fits inside this rim.

It should be noted that stone querns of patterns similar to those found in the Canary Islands are commonly used in Morocco and Algeria today.

The following is a list of places or localities in Tenerife where Guanche querns have been found, and museums in which the specimens now are.

Museo Municipal, Santa Cruz.....	Cuevas de Chirche, Guia
	Monte Pinar, Adeje
	Santiago
	Los costas de Chio, Guia
	Arafo
	Arona
	Jaquita, Granadilla
Museo Villa Benite, Santa Cruz.....	Bco. de Guasa, Guimar
	Roquete de Manta, Hareiduio
Peabody Museum.....	Matanza
	Tamaimo, Valle de Santiago

Lamps or basins. It is probable that the ancient inhabitants of Tenerife used lamps as well as torches. In the Museum of Santa Cruz there is a small lava basin, which was found in Cueva de los Pulvos, Antiguera, Anaga. It is a shallow depression hollowed in a circular disk of lava, and may have been used for a lamp or for a palette.

In the private collection of the Villa Benitez, Santa Cruz, there is another lava basin.

It is about 30 cm. long and 10 cm. high, and is oblong with rounded ends. This basin is well worked and is said to have come from Lanzarote.

Carved stones. One of the most curious objects of Guanche industry found in Tenerife is a small carved stone discovered in a cave of the Barranco Llarina, near Villa Orotava. (Plate 13, Fig. 2.) The stone is 9 cm. long, 8 cm. wide, and about 4 cm. thick. The material seems to be pumice. The top of the stone is roughly oblong, and on it is incised a peculiar key-shaped scroll pattern formed by a continuous groove. On the sides of the stone are cut many parallel vertical grooves, which are continued across the bottom of the stone. The wider end of the stone, which is almost plane, has horizontal grooves incised upon it; the other end, which is beak shaped, is partly covered with the scroll pattern and partly with vertical grooves.

The inscription of Anaga. In August, 1886, an alleged inscription was discovered at Anaga, the northern tip of Tenerife. At a depth of about 40 cm. at the bottom of a natural pit at approximately 100 meters above sea-level, and about a kilometer from the Point of Anaga, there was found a small semi-transparent stone, shaped like a truncated pyramid. On the summit of this stone are characters thought to have been engraved with a metal tool. (Text fig. 2.) The significance of this inscription has been discussed in an erudite fashion by Ossuna.[1] That writer considers many of the characters similar to the "form of writing in use in the second and third centuries B.C. in Palestine, southern Spain, and the north of Africa, especially Carthage." He believes that the characters were made by a metal graver with a triangular point. He compares various characters of the inscription with Punic, Iberian, Hebrew, Coptic, and Tuareg scripts. He does not, however, attempt any translation.

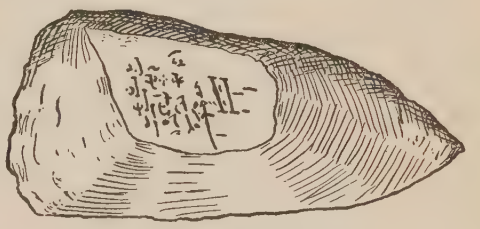


FIG. 2
The Anaga Inscription

Ossuna unquestioningly assumes that this Anaga inscription is connected with the islanders and their culture. If it is genuine, there is no reason for attributing it to the islanders. It may possibly record the discovery of the island by early navigators of Phoenician or other origin. The place of the discovery, at the extreme tip of the island, lends some probability to this supposition.

The present whereabouts of the stone seems uncertain.

Bone implements: *Awls.* The bone implements of Tenerife include awls, needles, and polishers. Of these, awls are the most common. The Municipal Museum at Santa Cruz exhibits 45, all made from the leg bones of goats. They vary in length from 5 cm. to 14 cm. The joint end is utilized as the butt of the implement. The awls taper gradually to blunt

[1] M. de Ossuna y van-den Heede, La Inscripción de Anaga, Tenerife, Santa Cruz de Tenerife, 1889.

points and are well rounded and smoothed. They were doubtless used principally for the piercing of skins. They are usually found in caves, both burial caves and those which were used as habitations. The private collection of Guanche remains in the Villa Benitez, above Santa Cruz, contains 10 of these bone awls, and there are several in the possession of Ramon Gomez, a collector and chemist of Puerto Orotava. Awls are found, moreover, throughout the island. The places represented by those on exhibition in the Municipal Museum are: Igueste de Candelaria, Arona, Granadilla, Cumbres de Arafo, Adeje, Tamaimo, Taganana, Canodoria.

Needles. Needles are much rarer than awls. They are sometimes made of bone and the eyes are skilfully bored. There are several such needles in the collection of Sr. Gomez. Verneau says that they were sometimes made of fish bones, and Viera records the use of the palm leaf spines as needles, but neither of these varieties seems now available for observation. The rarity of the needles is doubtless due to the fact that most of the existing Tenerife collections have been made by untrained observers who would be likely to overlook small objects.

Polishers. Bone polishers also were used by the Guanches in the preparation of skins and in smoothing pots. Two of these implements in the Santa Cruz Museum are 10 cm. and 15 cm. long respectively. Near one end a circular hole has been bored and the other, or business, end is rounded off. They are 3 cm. wide. These polishers were found near Tamaimo in the Valle de Santiago.

Problematical object. In the Municipal Museum there is a bone cylinder 2.5 cm. long, through which has been thrust a piece of bone 5 cm. long pointed at both ends. This may be a double awl. It was found in Igueste de Candelaria.

Objects of horn: *Ladles.* Objects of horn made by the Guanches of Tenerife are very scarce in archaeological collections. The Museum of Santa Cruz contains two well-worked horn ladles which were found in a cave containing Guanche remains near Arico. (Plate 9, fig. 1.) The lengths of these ladles are 21.5 cm. and 22.5 cm. respectively. The inside diameters of the bowls are 6 cm. and 10 cm. respectively. These should be compared with the wooden spoons from Tamaimo, which are of a different pattern and inferior workmanship.

Spear heads. The Guanches sometimes used horn tips for their lances and javelins. In the Museum at Santa Cruz are four such horn tips, one from Adeje and the rest from Igueste de Candelaria. The base of each of these tips is oval and the shaft of the lance is fitted into the hollow of the horn.

Fishhooks. The most common horn object is the fishhook. These have been carefully worked down and smoothed off, probably with obsidian flakes. In shape they much resemble modern forms, but they have no barbs. The shank of the fishhook has a rough knob at the end to prevent the line from slipping. The hooks vary in length from 6 cm. to 20 cm. Throughout the Canaries the aboriginal inhabitants, according to ancient accounts, were

skilled fishermen, although in Tenerife, since the Guanches had no boats and the art of swimming was probably unknown, fishing necessarily took place from the shore. Viera describes three kinds of fishing practised in Tenerife. The first was with hook and line; the second consisted in attracting the fish at night with a torch and harpooning them. The third method was called *a la tabaiba* and consisted in poisoning the waters of inlets with the juice of the euphorbia. A fourth method was practised by the natives of Gran Canaria and Gomera, who were good swimmers. When they saw a shoal of fishes they swam out and drove them toward the shore, where they were caught in nets weighted with stones.

There are thirteen horn fishhooks in the Santa Cruz Museum. Half of these came from Gomera and the rest from Tenerife. The following places are represented in Tenerife: Bco. del Inferno (Adeje), Candelaria, Granadilla, Valle de Santiago. The fishhooks are usually found in dwelling caves.

Verneau refers to a collection of fishhooks owned by Sr. Antonio Viña of Orotava.[1] He mentions that the horn examples were probably curved by heating them, and calls attention to the fact that the convex surface of the hook is notched, probably to facilitate the bending. It seems more probable, however, that these notches took the place of barbs. One or two examples in the Santa Cruz Museum exhibit this notching.

Fishhooks of shell were also utilized by the natives, some in one piece and some composed of two pieces joined in the middle. Examples of these are to be seen in the Santa Cruz Museum.

The collection of Villa Benite contains two fishhooks of horn. Verneau mentions a kind of fishhook in the collection of Sr. Viña in which a bone point with an exterior barb is fixed to a wooden shaft by cord wrappings smeared with resin.

Awls. Infrequently horn awls are found. Two of these, each 12 cm. in length, are to be seen in the Santa Cruz Museum. The place of their origin is unknown.

Objects of wood: *Bowls.* The Museum of Santa Cruz contains one wooden bowl from Costa del Rio, Arico. In shape it is roughly conical. The color is grayish brown and the material is probably palm wood. The bowl is 6 cm. high, the opening is 15.3 cm. in diameter, and the greatest circumference is 50 cm. This is apparently the only wooden bowl from Tenerife. Wooden bowls from Gomera are more common. Three of these are to be found in the Museum of Santa Cruz. One is a dipper-shaped receptacle with a solid handle, the second has a similar shape with a curved spatulate handle, and the third is a high conical jar without handles.

Spoons. Four wooden spoons of various sizes were found in a Guanche cave near Tamaimo, Valle de Santiago, and are now on exhibition in the Santa Cruz Museum. The smallest is 11 cm. long over all, and the largest 17.5 cm. They were fashioned each from a single piece of wood, probably with an obsidian knife. (Plate 9, fig. 2.)

[1] Rapport, p. 769.

Combs. Among the many interesting objects from the vicinity of Tamaimo, Valle de Santiago, is a large wooden comb with a long handle perpendicular to the teeth and pierced at the end, perhaps for suspension. (Plate 10, fig. 1.) The comb and handle are 20.5 cm. long and the teeth of the comb are about 6 cm. in length. It is probable that this comb was used as a head ornament by a Guanche woman, for the aborigines used skins for clothing and did not weave cloth. Hair combs of similar type are in common use in Africa. Two similar combs in the museum came from Gomera, and there is a double-toothed wooden comb from Malpais Grande, Furnije, Fuerteventura. Such wooden combs are frequently used by primitive peoples for combing out fur or wool.

Lances and batons de commandement. Wooden lances were among the principal weapons used by the Canarian aborigines in all of the islands. Concerning the Guanches of Tenerife Espinosa says:

> Their lances were twisted and sharpened, and fitted with certain small notches, and with two battens in the middle, between which it was fixed to the hand that it might not fly back, and that the blow might come with greater force. . . . These lances were called *banot.* They fought with them after they had closed with each other, and in delivering the blow they broke off the notches that the point might remain in the wound.[1]

Viera makes a similar statement.

In the Museum of Santa Cruz de Tenerife are eighteen wooden staves, eight of which are said to come from the island itself; the others are of unknown provenience. Five of these have cylindrical enlargements in the middle, or two disk-like enlargements separated from each other by a space hardly large enough to furnish room for a grip in throwing. These staves with the central enlargements are labelled *batons de commandement*, and are said to have belonged to chieftains. In respect to the middle battens, however, they correspond rather to the javelins or *banots* described by Espinosa. They vary in length from 90 cm. to 180 cm. The diameter in the middle of the shaft averages 3 cm., and they taper gradually to blunt points at both ends. Probably the ends were hardened in the fire or were furnished with horn tips. None of these lances exhibit the notches mentioned by Espinosa. Of course it is possible that these were " staves of office," but it seems more likely that they were actual weapons.

The *baton de commandement*, called by the Guanches *anepa*, was carried by a sort of beadle, or *sigone*, who preceded the *mencey*, or lord, whenever he went out. The *anepa* was a stave decorated at the end by a ring or disk of cane. Such a stave is figured by Berthelot.[2] It was found in a cave in the valley of Orotava, supposed to be the residence of the Mencey of Taoro. This cave was very spacious, and at the entrance were twelve or fifteen seats each made of a single block of stone. One higher than the rest occupied the centre of the cave. Near it was the baton. Others of smaller size were placed against the wall behind the other seats.

[1] Espinosa, op. cit., p. 38.

[2] Op. cit., vol. 1, Plate 1, fig. 7.

FIG. 1. HORN LADLES, ARICO, TENERIFE

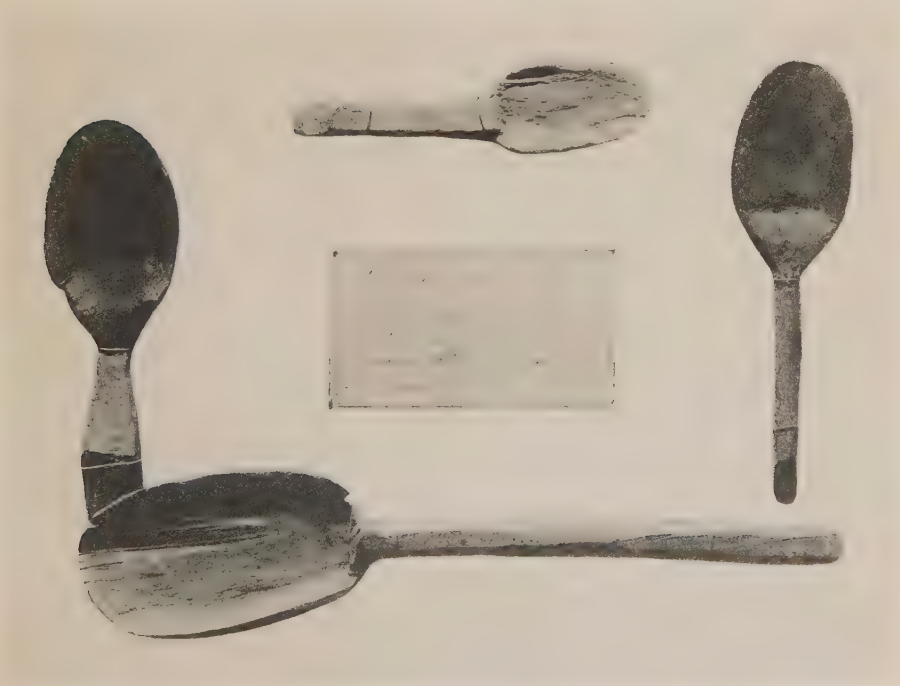


FIG. 2. WOODEN SPOONS, TAMAIMO, TENERIFE

Staves with knobs or rings or disks on the ends are among the eight from Tenerife exhibited at Santa Cruz. They vary in length from 100 cm. to 150 cm. There is considerable probability that these are the actual specimens found at Realejo.

Coffins and biers. Espinosa in the course of his description of Tenerife burial customs says that some of the embalmed bodies " were placed in coffins of imperishable wood, like tea, all made in one piece, carved into the shape of the corpse." Remains of such a coffin are to be seen in the Museum at Santa Cruz. It was found in Barranco Hondo, Tenerife, in the so-called Cueva del Picacho. The greater portion of the bottom of the coffin and the upper part of one of the sides is preserved. The coffin must originally have been about 2.75 m. long, 0.75 m. high and 0.75 m. wide. It seems to have been dug out of a solid log. The bottom and sides average about 5 cm. in thickness. The inside was burned out and then scraped. The ends are twice or three times as thick as the sides. They are rounded, apparently hewn with a stone implement. The bottom of the coffin is flat, but the sides probably followed, to some extent, the curve of the original log. The wood of which the coffin is made is probably pine.

Thomas Nichols, who visited the Canaries in 1526, is said to have been shown a large cave full of mummies in the district of Guimar. These mummies were stretched on biers. The head and feet extended beyond the biers and were supported by stones.

Two biers from the Cueva del Picacho, Barranco Hondo, are preserved in the Santa Cruz Museum. The first consists of two roughly-shaped poles laid parallel and supported at the ends by two crosspieces which are long enough to serve as handles. In all probability these crosspieces were lashed to the poles. The bier is of such a size that the neck and the feet of the body, when extended, would rest on the crosspieces, while the sides would be supported by the lengthwise poles.

The other bier has three crosspieces which are pierced by the parallel poles. In a woodcut reproduced in the Hakluyt translation of Espinosa's work on the Guanches of Tenerife, a Guanche burial cave is represented.[1] This is a facsimile from " *Allgemeine Historie der Reisen zu Wasser und Lande,*" Leipzig, 1748. It probably figures the visit of Thomas Nichols to the Guanche burial cave. The corpses are represented as stretched on oblong biers, which consist of platforms of planks supported at the corners by nicely squared legs. Head and feet are rested upon squared blocks, presumably of stone, and by the side of each bier stands a large jar of a type never found in Tenerife. This woodcut was probably made from Nichols's description and there is every reason for believing that the details of construction of the biers are inaccurate.

Miscellaneous. Espinosa states that the only defensive weapons of the Guanches of Tenerife were " the *Tamarcos,* being small shields of Draco wood, fastened on the arm." [2] Viera says that the Canarians had shields of draco wood, and Viana states that for the most part the warriors fought naked, with the *tamarco* or skin garment twisted around the left

[1] Espinosa, op. cit., p. 40.

[2] Op. cit., p. 38.

arm to serve as a shield. It seems probable that the Guanches of Tenerife never used wooden shields. Espinosa was probably mistaken when he said that the *tamarcos* were small shields of draco wood. In the later part of the same passage he states that " when they went forth to battle they were nearly naked, having their *tamarcos* twisted on one arm." Here he cannot mean a wooden shield. It is reasonable to suppose that Viera followed Espinosa in his statement about shields; Viana does not mention them. No wooden shield has apparently been found in Tenerife.

According to Viera the Guanches used a mace or *magado* — an axe with a wooden handle and an obsidian blade.[1] These seem, however, to have been used especially by the natives of Gran Canaria. Viera says that they were sometimes weighted with pebbles. Verneau [2] says that the mace was a simple wooden club with a knob on the end, and that it was used by the chief as a *baton de commandement.* None of the batons in the Santa Cruz Museum are sufficiently heavy to have been of use as a mace, except for ceremonial purposes.

Objects of personal adornment: *Terra cotta beads.* Necklaces made of terra cotta beads are the most common Guanche ornament found in Tenerife. These beads are made of well-baked clay. The exterior is reddish, or more rarely black, and when the bead is broken open the interior is seen to be darker than the outside. The majority of the beads are flat, circular disks averaging 11 mm. in diameter and from 3 mm. to 6 mm. in thickness. There are some, 8 mm. or 9 mm. in thickness, in which a groove has been incised around the middle in such a way as to divide the bead into two parts, each about the thickness of one of the thinner disks. It seems probable that the beads were made by rolling a cylinder of clay, boring a hole through it, and then cutting the cylinder into sections which afterward were baked. The central holes, which are usually 3 mm. or 4 mm. in diameter, are very neatly bored, probably by means of a hollow stalk. Some of the beads are cylindrical, 6 mm. to 8 mm. in diameter and 10 mm. to 35 mm. long.

There are ten terra cotta necklaces in the Museum of Santa Cruz de Tenerife. These came from Tamaimo, Arona, Candelaria, Adeje, Tegueste, Guia, Taganana, Taucho. Ramon Gomez, a chemist of Orotava, has in his possession several strings of terra cotta beads found near Orotava. There are also a number of terra cotta beads at Laguna in the collection of Villa Benite; and a string found in a cave in Bco. Romero, near Guia, is in the collection of the Peabody Museum. (Plate 10, fig. 2.)

Similar beads are found in the other islands of the Canary group.

Bone beads. Cylindrical bone beads are often found with those of terra cotta. These have been collected especially in the burial caves of the Valle de Santiago. In Fuerteventura are found many flat, rectangular pieces of bone nicely polished and pierced for suspension by a central hole or, in case of the oblong specimens, a hole in each end or in one end only.

[1] Noticias, de la Historia General de las Islas Canarias, D. José de Vierra y Clavijo, Santa Cruz de Tenerife, 1858, vol. 1, ch. X, p. 137.

[2] Rapport, p. 770.

FIG. 1. TERRA COTTA BEADS AND WOODEN COMB, TAMAIMO, TENERIFE

FIG. 2. TERRA COTTA BEADS, ADEJE, TENERIFE

HELIOTYPE CO. BOSTON

FIG. 1. PIERCED SHELLS, CANDELARIA, TENERIFE

FIG. 2. PIERCED SHELL AND BONE ORNAMENTS, JANDIA, FUERTEVENTURA

HELIOTYPE CO. BOSTON

(Plate 11, fig. 2.) Flat, circular disks of bone occur rarely in Tenerife, and it is doubtful if the rectangular forms are found in this island.

Shell ornaments and beads. Shells were very commonly used for personal adornment by the aborigines of the Canary Islands. Shell ornaments may be divided into three classes: unworked shells, shells which are perforated for suspension only, disks or beads of shell.

Unworked shells are found in burial caves and habitation caves throughout the islands. Thirty-five such shells from Gomera are in the Santa Cruz collection. Some were found in an earthenware vessel. Ge, Lanzarote, is another site from which unworked shells have been gathered for the Santa Cruz Museum. Such shells also occur in Tenerife.

Perforated shells are more common. Many flat, circular shells with spiral moulding seem to have been used for ornaments. In Tenerife these have been found in greatest numbers near Candelaria. (Plate 11, fig. 1.) There are many in the Santa Cruz Museum and two at the Villa Benite. One was found in a burial cave at San Andres.

Often circular disk beads are cut from shell and drilled for suspension. As in the case of the bone pendants, the natives of Fuerteventura cut their shell pendants into rectangular forms.

Early writers mention the use of shell ornaments and terra cotta beads by the Guanches. Viana describes the costume of the Princess Dacil, daughter of the *Mencey* of Taoro, Tenerife, and refers to her necklaces of shells and amber. Apparently no amber beads have been found in Tenerife. Possibly the term " amber " is a poetical exaltation of the terra cotta beads which were commonly used.

Mummies and embalming. Guanche mummies from Tenerife have long been famous. As we noted before, Thomas Nichols, who visited the islands in 1526, is said to have been shown a cave in the district of Guimar, containing three or four hundred. The Guanches at this time said that there were more than twenty caves in Tenerife containing the bodies of princes and people of distinction. The secret of the entrance to these caves was known only to the old men, who claimed to be quite ignorant of even the whereabouts of the caves.

It seems certain that not more than four or five of these caves have been found. Viera mentions the famous cave in the Bco. de Herque, between Arico and Guimar, which was explored in 1770.[1] The cave was very large, though the entrance to it was small. There were many niches in the wall, containing altogether more than 1000 mummies. At the beginning of the nineteenth century a large cave was found between Tacaronte and Sauzal. From this have come most of the mummies in European collections. Pieces of Guanche mummies formed an important ingredient in medicinal compounds of mediaeval Europe; and mummies were brought from the Canary Islands in large numbers for this purpose. Owing to this commercial exploitation, to the activities of amateur relic hunters and collectors, and above all to the destructive habits of the modern natives who almost invariably

[1] Noticias, op. cit., vol. 1, bk. II, ch. XVII, p. 161.

destroy whatever Guanche remains they find, it is now exceedingly difficult for the scientific observer to find undisturbed Guanche burial caves, particularly the large caves where people of importance — the only ones whose bodies were embalmed — have been buried.

The best early accounts of embalming in Tenerife are those of Espinosa and Abreu Galindo.[1] It is generally agreed that the work was done by a professional class which was considered impure and whose members were social outcasts. The first step was the washing of the body. Galindo says that this was done twice a day during the period of embalmment and that the bowels were removed before the washing. Espinosa states that after the washing, the embalmers "forced down the mouth certain confections made of melted mutton grease, powder of heath and of stones, bark of pine trees, and I know not what else, cramming the preparation down each day, and putting the corpse in the sun, on one side and then on the other, for the space of fifteen days until it was dry."[2] Galindo says:

"after washing it sufficiently, they anointed those parts [the arm-pits, behind the ears, the groin, between the fingers, and the neck] with sheep's butter, and sprinkled them with a powder made of the dust of decayed pine-trees and a sort of brushwood which the Spaniards call Bressos, together with the powder of pumice-stone. . . ."[3]

Viera supposes that the aromatic and astringent ointment used for the outside of the body was also applied to the interior.[4] It is also stated that the body was opened with a *tabona*, or obsidian knife. Whether or not the viscera were removed, is questionable. In Gran Canaria, Galindo says that they took out the intestines and stomach, liver and spleen, and all the viscera.[5] And Dr. Marin y Cubas says that a semilunar incision was made in the abdomen on the right below the ribs and the viscera were removed; the brain was removed from the head and the cavity filled with a mixture of sand, ground pine, bark, and juice of mocan.[6]

To clear the way for the elucidation of this problem, it may be stated with certainty that the Canarian mummies in existence owe their preservation in part, at least, to the treatment of the body in embalming. For we know that only the upper classes were embalmed, and many burials of the lower class Guanches have been found and may be found today, in which the bones are perfectly clean and devoid of all soft parts. Nor is there even a shred of goatskin to be found with such skeletons.

The winters in Tenerife are damp, and human remains exposed to the air in caves would certainly deteriorate, though bones are well preserved. It then remains to be decided whether the preservation of mummies is due to the goatskin wrappings, to the process of anointing and drying the body described by the historians, to some internal treatment of the corpse, or to all of these factors.

It seems clear that in certain instances incisions were made in the abdomen of the Canarian corpse by the embalmers. We need not take into account the literary evidence

[1] Espinosa, op. cit., pp. 40–41. Galindo, op. cit., vol. 3, pp. 151–152.
[2] Loc. cit.
[3] Loc. cit.
[4] Berthelot, op. cit., vol. 1, p. 141.
[5] Op. cit., p. 74.
[6] Op. cit., vol. 2, p. 18.

of Dr. Marin y Cubas on this point. It is sufficiently attested by observation. Dr. Chil saw a Guanche mummy on exhibition at the Exposition Universelle of Paris in 1878. There was a large incision in the right iliac fossa, carefully sewed up. Berthelot has observed a similar incision. There is no doubt that in cases where the abdomen was opened the viscera were removed or treated with some preservative or corrosive. Herodotus,[1] in describing the methods of embalming practised by the Egyptians, states that by the most expensive method of embalming the intestines were drawn out through an incision in the left side, the abdomen cleansed with palm wine, filled with myrrh, cassia, and other materials, and the opening sewed up. By the second and less expensive method, the abdomen was injected with cedar pitch, which is said by Herodotus to have had a corrosive and solvent action on the viscera. In the least expensive forms of embalming, the abdomen was simply rinsed out with "smyrnae" or not opened at all. In some cases, the body was merely immersed in a bath of molten bitumen or was tanned.

Dr. Chil examined certain mummies in which the viscera were complete and the ribs, cartilages, abdominal wall, and perineum were intact. Viera thought that the viscera were extracted through the anus, but this would be impracticable. It seems certain that among the Guanches, as among the Egyptians, the viscera were removed in more important cases, and left in place when the dead were poorer or less important. Just at present it is impossible to make any definite statement as to the removal of the viscera in the case of Tenerife mummies.

The question that next arises is that of the validity of Espinosa's statement that certain confections were crammed daily down the mouth of the dead. Castillo makes a similar statement in regard to embalming in Gran Canaria. Chil doubts the correctness of this on the ground that it would be difficult and ineffective, but any student of primitive peoples knows they are not deterred from practices of any kind for reasons such as this. This question can be settled only by examination of specimens. The possibility of injection of a corrosive or preservative substance, such as is stated in the second method described by Herodotus, should not be overlooked.[2]

Marin y Cubas, in describing the process of embalming in Gran Canaria, states that the brain was removed from the head and the cavity filled with a mixture of sand, ground pine bark, and juice of mocan. Viera says that the brain was removed through the nostrils. One of the difficulties standing in the way of an implicit faith in the statements of the early historians on the subject of Guanche embalming is the fact that we do not know to what extent their explanations and views were colored by the analogy of Egyptian embalming, and more especially by the passage in Herodotus in which the methods of embalming are

[1] Herodotus, II, 86.

[2] Bory de Saint Vincent says that he thinks the Guanches made use of the juice of the spurge in embalming and that they doubtless employed the species proper to their climate, which is acrid and milky. He himself recognized whole pieces in the chest of a mummy, in which, nevertheless, there existed no traces of an incision. Bory de Saint Vincent, Essais sur les Îles Fortunées, et l'Antique Atlantide, Paris, 1803, p. 61.

described. In the most elaborate form of Egyptian embalming Herodotus says that the brain was removed through the nostrils, partly by means of a bent instrument and in part by the injection of drugs.

In order to remove the brain through the nostrils it would be necessary to fracture the nasal septum and to destroy the ethmoid bone. The results of this procedure are sometimes seen in Egyptian mummies. Chil, however, has never observed signs of the removal of the brain through the nostrils in Guanche mummies. He also suggests that the possibility of the removal of the brain through the foramen magnum is excluded by the fact that the occipital musculature and ligaments of all the mummies he has been able to examine are intact, and there is no sign of disarticulation. Gannal,[1] an early nineteenth-century writer on embalming, states that one M. Jouannet has proved that two Guanche mummies in his possession had the eyes, nose, and mouth filled with bitumen, like some of the Egyptian mummies. The skins which enveloped them were carefully closed, and nothing indicated that the bitumen was an addition posterior to embalming.

The historians agree that after the body had been washed and anointed it was placed in the sun to dry for fifteen days. Marin y Cubas adds that the body was smoked at night. During this period the relatives wailed over the corpse, as there were no obsequies after the embalming had been finished.

According to Espinosa:

> The corpse was then sewn up and enveloped in leather from certain heads of the flock, selected and set apart for the purpose. Thus the corpse of the deceased could afterwards be known by the marks on the hide. These skins were tanned to chamois color, and were sewn over with pine bark with much skill, . . . so that the sewing could hardly be seen. . . . Many other skins were placed on the top . . .

Galindo, in reference to this part of the process in Tenerife, says that the swathing was done by the relatives of the deceased. The number of wrappings seems to have varied according to the importance of the dead man. In Tenerife important persons had as many as six wrappings. Dr. Chil quotes the account by Emilio Martinez de Escobar of some mummies taken from the ravine of Guayadeque, Gran Canaria, in 1855. From ten to twelve wrappings encased these mummies. The six interior coverings were made of skins of unborn lambs, well preserved, soft, and elastic. The finest skins, nearest the body, were colored black and red.

The skins were wrapped round the body and fastened with leather thongs which, according to Berthelot, were sometimes held together with hooks of bone or horn.

The corpse seems to have been arrayed in the *tamarco* or tunic, and in Gran Canaria, where a rush, reed, or goatskin breech-cloth was worn, this is also found on some of the mummies. Considering the probable embalming process by injection or stuffing with aromatic substances, the tanning of the skin, the careful wrapping of the dried body, and

[1] Gannal, On the History of Embalming, Philadelphia, 1840, p. 52.

finally the climatic conditions of the Canary Islands, which are relatively favorable for the preservation of human remains, it is not to be wondered at that Guanche mummies are so famous for their lifelike appearance and excellent condition.

Espinosa says that when the embalming process had been finished the mummy was placed in a coffin " of imperishable wood, like *tea*, all made of one piece, carved into the shape of the corpse." It was then left in some inaccessible burial cave. On the other hand, Galindo says that they put the body away in the cave without any covering other than the skins wrapped round it.[1] Viera says that in Gran Canaria important persons were placed in coffins of *sabina* or *tea*, and that some were arranged vertically against the wall and some laid out in rows.[2] Probably comparatively few were buried in the coffins in Tenerife, as few coffins seem to have been found. The mummy seen by Dr. Chil at the Exposition Universelle of Paris in 1878 was enclosed in a coffin. Portions of several of these coffins are preserved in the Museum of Santa Cruz de Tenerife. More commonly the bodies seem to have been laid out on biers. This was the arrangement seen by Thomas Nichols in 1526 in the mummy cave near Guimar. Portions of these biers have frequently been found in recent times.

Still another method, recorded by Berthelot, consisted simply in laying out the mummies on beds of twigs and sticks. This seems to have been the arrangement followed in a disturbed burial cave investigated during the expedition of 1915. The human remains, which covered the floor of the cave, were mixed with many dry twigs and sticks.

Frequently jars containing goat's butter, honey, or some variety of unguent were deposited near the bier of the dead. These were observed by Nichols in the cave near Guimar and again in 1855 when the mummy cave was discovered at Guayadeque, Gran Canaria. In this connection it may be interesting to note that Herodotus in his account of Egyptian embalming says that the viscera were commonly removed and placed in jars near the mummy.

At the present time Tenerife possesses in its museum no first class example of a Guanche mummy found in the island. Within the past few years two mummies, one child and one adult, were sold by a local collector to a museum at Buenos Aires, Argentina. These are said to have been mounted in the erect posture. The plundered burial cave at San Andres is said to have yielded up mummies some fifteen years ago, when it was looted by an Austrian. Five or six mummies were acquired by a German collector about 1880. Some of these are said to have been women having long, beautiful hair. A small Guanche museum at Tacaronte containing pottery and mummies has been sold recently, probably to the museum at Buenos Aires.

The Municipal Museum of Santa Cruz de Tenerife contains two complete mummies, in a bad state of preservation, and many fragments of mummies (Plate 12). The latter include several pairs of lower limbs, hands, heads, etc. The dried skin still adheres to the bones and in several cases the wrappings are preserved. In every instance the hair has

[1] Op. cit., vol. 1, p. 151.

[2] Op. cit., vol. 1, bk. II, ch. XVII, p. 160.

fallen from the heads although such features as the finger nails, eyelids, ears, etc. are preserved. It seems probable that these specimens have degenerated very greatly since they were placed on exhibition.

Both of the complete mummies seem to have been embalmed with the body on its back in an extended posture. The arms are placed close to the sides with the palms resting on the hips. It may be deduced from this fact that we are dealing with males, inasmuch as females were embalmed with their arms crossed on their stomachs.[1] The body of the male was encased in a sleeved tunic or *tamarco* of goatskin, which was finely sewed with a simple over-and-under stitch. Over this were several layers of loosely wrapped skin with rawhide thongs wound over all. The stitching of the wrappings was much coarser than that of the inner garment. The mummy of the adult male is about 1.60 m. long.

The mummy of the child is in a poor state of preservation. The coverings are very dry and brittle and worm-eaten. Most of the outer wrappings have disappeared. The close innermost wrapping covers the body and head, and to the head-covering is attached a small bag which probably contained food at the time of the burial. It is almost certain from the position of their feet and heads that these mummies were originally laid out on their backs. They could not have been stood upright against the walls of the cave. Berthelot says that the mummy of an old woman was found near Tacaronte, buried in a crouching position.

The mummies above described were found in a cave at Araya, Candelaria, Tenerife. In the collection of the Villa Benite, Santa Cruz, are several fragments of mummies from the vicinity of Anaga, in the north of the island. These include crania, feet, and arms. In some cases the hair, which is dark, still adheres to the skull. There is also in this collection a mummified male of short stature, wrapped in finely sewn goatskins. This was found at Mte. Taco near Santa Cruz.

At Puerto Orotava, Sr. Ramon Gomez has accumulated some Guanche antiquities, among which is a poorly preserved mummy. There was no opportunity to examine this specimen closely. Dr. Chil speaks of a visit he made to Tenerife to examine the mummy collection of Sebastian Casilda, then in the possession of Carlos Lebrun, and probably still in existence.

One of the arguments frequently adduced in support of the theory that the Guanches were blonds, or that there were many blonds among them, is the occurrence of blond or yellow hair in Guanche mummies. Viera[2] states that he has seen mummies with golden hair and Berthelot also adduces this argument. Dr. Verneau rightly points out that yellow hair in mummies cannot be taken as proof of yellow hair in life, inasmuch as the action of preservative materials and the lapse of time not infrequently has a bleaching effect upon the hair. Yellow hair due to such chemical action may frequently be observed in Egyptian mummies.

[1] Viera, op. cit., vol. 1, bk. II, ch. XVII, p. 161.

[2] Noticias, op. cit., vol. 1, bk. II, ch. III, p. 113.

FIG. 1

FIG. 2

GUANCHE MUMMIES

Courtesy of the Museum of Santa Cruz de Tenerife

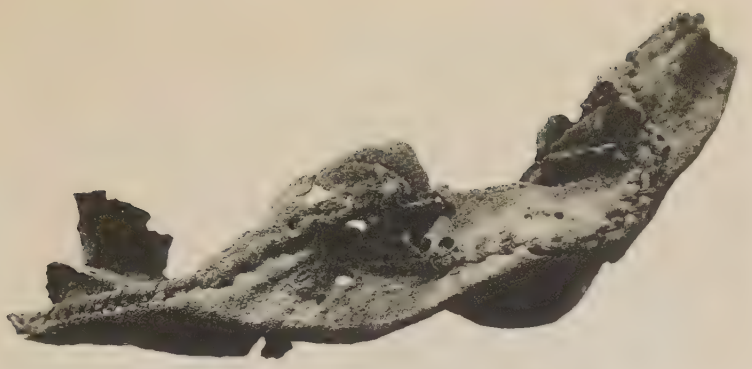


FIG. 1. PORTION OF GOATSKIN MUMMY WRAPPING FOUND IN A GUANCHE BURIAL CAVE IN TENERIFE

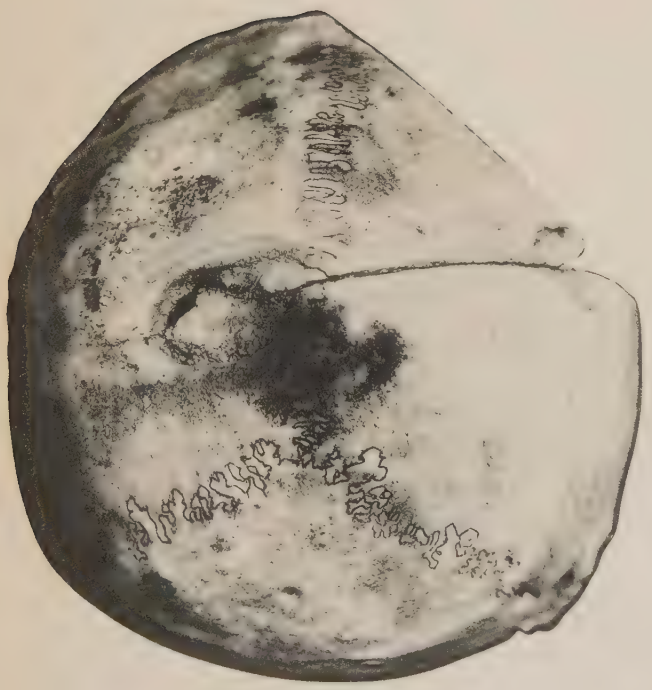


FIG. 3. SKULL FRAGMENT FROM CAVE NEAR SAN ANDRES, TENERIFE, SHOWING DEPRESSED AND LINEAR FRACTURES

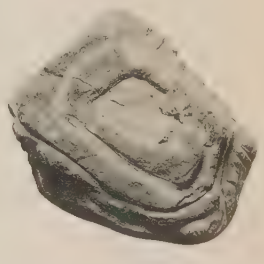


FIG. 2. CARVED STONE, BCO. LLARINA, TENERIFE

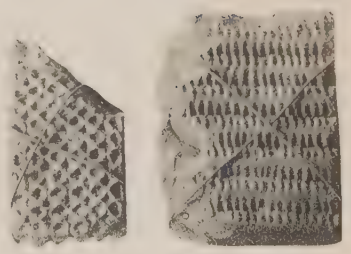


FIG. 4. POTTERY STAMPS, GRAN CANARIA

HELIOTYPE CO. BOSTON

The custom of embalming the dead seems not to have been confined to Tenerife. It was practised in all of the other islands of the Canary group with the possible exceptions of Lanzarote and Fuerteventura. Dr. Chil has seen no mummy from Lanzarote and no one else seems to have recorded such a find. The historians fail to mention embalming in connection with Fuerteventura. These two islands are the least known of the group archaeologically, and it is quite possible that, as Chil believes, embalming was practised here also.

The historians are again noncommittal in regard to embalming in La Palma, but Bory de Saint Vincent states that a catacomb full of mummies was found in La Palma in 1758. These mummies are said to have fallen into powder almost immediately. Chil states that perfectly embalmed mummies have been found in this island, and that they were destroyed by the finders. Verneau states that mummies were discovered here in 1881.[1]

There exists no literary evidence in regard to embalming in the island of Hierro, but Dr. Chil saw a perfectly preserved part of a mummy in the possession of Aquilino Padron, a native of the island. Verneau also reports that he found the remains of mummies in the Barranco de la Guerra.[2]

Verneau also claims to have found fragments of mummies in Gomera. The mummies of Gran Canaria are almost as well known as those of Tenerife, though, curiously enough, Sabin Berthelot doubted their existence. The Museum of Las Palmas is said to contain an excellent collection.

[1] Rapport, p. 754.

[2] Rapport, p. 754.

CHAPTER III

COMMENTARY ON THE CUSTOMS AND MATERIAL CULTURE OF GRAN CANARIA, GOMERA, HIERRO, LA PALMA, FUERTEVENTURA, AND LANZAROTE

GRAN CANARIA: CUSTOMS

General characteristics. The inhabitants of Gran Canaria, according to ancient testimony, differed somewhat in physical characteristics from the Guanches of Tenerife. Galindo says:

> They were of a dark complexion, like the natives of Lancerota and Fuerteventura, well proportioned, and of a good stature; active, warlike, chearful, good-natured, and strictly faithful to their promises, insomuch that they considered a lye as the greatest of crimes. They were very fond of hazardous enterprises, such as climbing to the top of steep precipices, to pitch poles of so great weight, that one of them was a sufficient burden for a man of common strength to carry on level ground.[1]

Conferring of nobility. The Gran Canarians were divided into nobles and commoners, like the Guanches. Again we may draw upon the account of Galindo, translated by Captain Glas:

> The Canarians had nobility among them, who were distinguished from the vulgar by the peculiar cut of their hair and beards. It was not sufficient to entitle a man to nobility, that he was the offspring of noble or rich parents; but he was to be formally declared noble by the Faycag, a person of great rank, and next in dignity to the Guanarteme, whose business it was to decide differences among the natives, and regulate the ceremonies of their religion; in short, he was a priest, and acted also as a judge in civil affairs.
>
> Their manner of conferring nobility was very singular: at a determined time of life, the son of a nobleman let his hair grow long; and when he found he had strength sufficient to bear the fatigues of war, he went to the Faycag, and said, "I am such an one, the son of such a nobleman, and desire to be ennobled also." Upon which the Faycag went to the town or village where the young man was brought up, and there assembled all the nobles and others of that place, whom he made to swear solemnly by Acoran, their god, to declare the truth concerning him. He then asked them, if they had ever seen the youth demean himself so far as to dress victual, or to go into the folds to look after sheep or goats, and whether he was ever known to milk or kill them: if they knew any thing of his stealing cattle, or forcibly taking them away from their owners in time of peace: whether he was any way discourteous, ill-tongued, or guilty of any indecent behavior, especially to women. If to these questions they all answered in the negative, then the Faycag cut the youth's hair in a round form, and so short as not to hang beneath his ears; then giving into his hand a staff or pole called Magade, declared him noble. But, on the other hand, if the standers-by could charge him with any of those things, of which the Faycag had interrogated them, and bring sufficient proof thereof, then instead of being declared noble, the Faycag shaved his head, and sent him away in disgrace, by which he was rendered incapable of nobility, and remained ever after a plebeian.[2]

[1] Galindo, op. cit., p. 65.

[2] Galindo, op. cit., pp. 65–66.

With this we may compare the account of Tacitus of the introduction of youths to the rights of citizens and soldiers:

> Sed arma sumere non ante cuiquam moris, quam civitas suffecturum probaverit. Tum in ipso concilio vel principum aliquis vel pater vel propinqui scuto frameaque iuvenem ornant. Haec apud illos toga, hic primus iuventae honos; ante hoc domus pars videntur, mox rei publicae. Insignis nobilitas aut magna patrum merita principis dignationem etiam adulescentulis adsignant; ceteris robustioribus ac iam pridem probatis adgregantur, nec rubor inter comites adspici.[1]

The description of this ceremony of investing youths with nobility, among the Gran Canarians has several points of ethnological interest. A shaven head was apparently a mark of social inferiority, and wearing the hair and beard long was a sign of nobility. The Florentine who visited the Canary Islands in 1341 and whose account has been preserved by Boccaccio, describes as follows four young men who were taken away from the island of Gran Canaria:

> The four men whom they carried away were young and beardless, and had handsome faces. They wore nothing but a sort of apron made of cord, from which they hung a number of palm or reed fibres of a hair's-breadth and a half or two-hairs'-breadth [*sic*], which formed an effectual covering. They were uncircumcised. Their long light hair veiled their bodies down to the waist and they went barefooted.[2]

Evidently these young men were nobles and belonged to the blond stock of the island. Azurara, writing in 1448, states that the Gran Canarians shaved with stones. This probably applies to the plebeians. The Germans cherished their flowing locks as the sign and symbol of their freedom and the gift of a lock of one's hair was a token of submission. The Frisian men, when they took oath, touched hair or beard, and the Frankish kings were never allowed to poll their locks from the time of their childhood. If they did so they forfeited their right to the kingship.[3]

Among the Germans, according to Tacitus, a woman caught in adultery had her hair cut and was expelled from her home and beaten naked through the village.[4] But the wearing of the hair long among high-born persons is a custom by no means confined to the ancient Canarians and Germans. On account of the magical practises which ill-disposed people may carry out if they come into possession of a person's hair, there is some difficulty in disposing of shorn locks. And this danger is particularly enhanced in the case of kings, priests, and other sacred persons.[5]

Another interesting feature of the ennobling of the Canarian youth is the prohibition from engaging in pastoral duties which is implied in the ceremony. " He [the *Faycag*] then asked them if they had ever seen the youth demean himself so far as to dress victual or to

[1] Tacitus, Germania, chap. 13, 1–3.
[2] Bontier and Le Verrier, op. cit., introduction, p. xviii.
[3] Francis B. Gummere, Germanic Origins, New York, 1892, p. 60.
[4] Tacitus, Germania, chap. 19, 2.
[5] J. G. Frazer, The Golden Bough: Taboo and the Perils of the Soul, London, 1911, pp. 258–260.

go into the folds to look after sheep or goats, and whether he was ever known to milk or kill them." This is certainly not an interdiction which would be expected if the nobles had sprung from a nomadic pastoral stock.

Religious and political functions of women. Women in Gran Canaria seem to have played a more important rôle in political and religious life than they did in Tenerife. Galindo says:

> The Canarians had among them religious women, called Magadas, a number of whom lived together in one house. There were many of those houses in Canaria, which were held sacred; and criminals who fled to any of them, were protected from the officers of justice. The Magadas were distinguished from other women by their long white garments, which swept the ground as they walked. . . .
>
> In the island there are two rocks, one in the district of Galdar, named Tirmac; the other in Telde, called Vinicaya. To these rocks they went in procession in time of public calamity, accompanied by the religious women called Magadas, carrying in their hands branches of palm-trees, and vessels filled with milk and butter, which they poured on the rocks, dancing round them, and singing mournful songs like dirges, or what the Spaniards call Endechas; from thence they went to the sea-side, and all at once and with one accord struck the water forcibly with their rods, shouting together at the same time with a very loud voice.[1]

Women evidently exercised considerable political influence. Galindo says that in Galdar lived a virgin lady called Antidamana, who on account of her wisdom, prudence, and eloquence, was often called upon to settle disputes, and from whose judgments there was no appeal. Finally the nobles became jealous and persuaded the people no longer to refer their causes to her nor to regard her decisions. This astute lady then selected the most powerful of the chiefs and persuaded him to marry her. The pair then made war upon the other chiefs and vanquished them one by one until they had made themselves rulers of the entire island. Their son succeeded them.

This story arouses suspicion that some sort of a female ruler or queen formerly held the authority in Gran Canaria, but was ultimately supplanted by a male ruler of the noble class. Galindo gives another illuminating example of the potency of females in political and religious affairs. The Canarians had captured eighty Spaniards and were about to put them to death.

> When they were all brought thither, they were bound, tied to a stake, and the fuel was put round them; but as the fire was about to be kindled, a woman came running towards the place in great haste, calling out aloud not to kindle the fire. It is reported, that this woman was held in great reputation among the natives, holding the rank of Lady Abbess, or chief of the Magadas, or religious women. She had a son present, who was a Gayre, and who had brought his prisoner there with the rest; to him she declared that she was ordered by Acoran to warn him to have no hand in the death of the Spaniards, otherwise some dreadful affliction would certainly befall him. As the Canarians were very superstitious, and gave great credit to the predictions of religious people, the Gayre, her son, immediately set his prisoner at liberty; which when the rest saw, they followed his example. . . .[2]

[1] Galindo, op. cit., pp. 69–70. This is obviously a rain ceremony.

[2] Galindo, op. cit., pp. 101–102.

Viana reports the existence of a similar class of sacred women in Tenerife, but the other early writers do not mention them.

Chil states, apparently on the authority of Gomez Escudero, that the king of Gran Canaria could marry only his first cousin or his brother's widow.[1] This seems to indicate that, as in Tenerife, the kingship descended through the female line and was inherited by brothers. Chil also says that the government was an hereditary monarchy, the females succeeding in default of the males.[2]

That the kingship tended to descend in the female line is also indicated by the following incident. The *guanarteme* of Galdar, who was said to be king of the entire island, was captured by the Spaniards, converted to Christianity, and christened Don Fernandino. The fighting remnant of the Gran Canarians retreated to an impregnable place and determined to die rather than to surrender.

> The number of natives then assembled was about six hundred fighting men, and a thousand women and children, among whom were all the nobles, with the Faycag, and the young Guanarteme of Telde. *This youth was on the point of being married to the King of Galdar's daughter, then present, by which marriage he purposed to make himself King of the whole island.* . . . Don Ferdinando [the ex-king of Galdar]. . . . at length prevailed on the natives to surrender, which they did by throwing down their arms, and at the same time setting up a dismal howling and crying. The young Guanarteme of Telde, seeing his hopes thus blasted, went to the brow of a precipice, accompanied by the old Faycag, where embracing each other, and calling out Atirtisma! they threw themselves down and perished together.[3]

Azurara makes the following statement concerning the government of Gran Canaria in 1448:

> The Great Canary was ruled by two kings and a duke, who were elected, but the real governors of the island were an assembly of knights, who were not to be less than one hundred and ninety, nor so many as two hundred, and whose numbers were filled up by election from the sons of their own class.[4]

In consideration of the foregoing accounts of ancient writers I am inclined to believe that in Gran Canaria, some time previous to the conquest, the government was carried on by a priestly class among whom women were very prominent and that the dominance of this class was replaced by that of a military nobility, probably consisting largely of the blond element, as in Tenerife.

Marriage. Galindo says of marriage in Gran Canaria:

> None of the Canarians had more than one wife, and the wife one husband, contrary to what some misinformed authors affirm. When the parents were inclined to marry their daughter, they set her apart thirty days, during which they fed her with large quantities of milk and goffio, in order to fatten her; for they imagined lean women were less capable of conceiving children than those who

[1] Chil y Naranjo, op. cit., p. 475.
[2] Op. cit., p. 527.
[3] Galindo, op. cit., pp. 121–122. The italics are mine.
[4] Bontier and Le Verrier, op. cit., introduction, p. xxxi.

were fat. It has also been said, that the night before the bride was presented to her husband, she was delivered to the Guanarteme, who, if he did not chuse to lie with her himself, gave her to the Faycag, or to some other noble person of his intimate acquaintance, to enjoy her: but the present natives deny that such a custom ever existed among their ancestors.[1]

The practice of fattening a girl before marriage has an interesting distribution in Africa. In the island of Gerba off the coast of Tunisia a girl is secluded in a chamber for forty days preceding her marriage. She is not allowed to see the sun and must do no work. During this time she is stuffed with barley meal, sorghum, kouskous, and the flesh of dog. This is for the purpose of making her fat.[2] Among the Southern Tuareg the women are sedulously fattened before marriage.[3] The Moors of the Senegal consider flesh an element of beauty in women and the rich Mooresses are fattened before marriage. Old women feed them on milk, butter, and meal, and aid the distention by massage.[4] Other instances of this practice probably occur among the whites of North Africa, but these are the only ones I have encountered.[5] But the custom crops up again among the Negro tribes of the Sudan. The Ibo of Nigeria immure their brides in huts until they attain " the acme of beauty according to the Ibu taste, namely such an amount of obesity as very materially to interfere with the faculty of locomotion." [6]

Among the Ekoi, one of the semi-Bantu peoples of Nigeria, near the Cameroon border, all free-born girls of well-to-do parents spend a time in the " fatting-house." During this period, which varies from a few weeks to two years, the girls may not wash their faces and are not supposed to do any work.[7]

In Karagwe, now a part of the Uganda Protectorate in East Africa, Speke was enormously impressed by the obesity of the Bahima women belonging to the Hamitic aristocracy which ruled the negroes. He induced one of these fat ladies to allow him to measure her, but after he had got her on her feet by prodigious exertions, she sank down fainting.

> Meanwhile, the daughter, a lass of sixteen, sat stark-naked before us, sucking at a milk-pot, on which the father kept her at work by holding a rod in his hand, for as fattening is the first duty of fashionable female life, it must be duly enforced by the rod if necessary.[8]

Livingstone records a similar custom among the Makololo, a Southern Bantu tribe.[9]

In Africa this custom seems to be connected particularly with the brunet white stock

[1] Galindo, op. cit., pp. 68–69.

[2] L. Bertholon, Exploration anthropologique de l'île de Gerba, L'Anthropologie, Paris, 1897, vol. 8, p. 564.

[3] Capt. Aymard, Les Touareg, Paris, 1911, pp. 89–90.

[4] Dr. Lasnet, Une Mission au Sénégal. Paris, 1900, p. 15.

[5] L. Frobenius, Atlas Africanus, München, 1921, vol. 1, p. 5, ascribes the custom of woman-fattening to the whole Saharan region south of the Atlas and west of a line running from the Gulf of Sidra to Lake Chad.

[6] Allen and Thomson, Narrative of the Expedition to the River Niger in 1841, London, 1848, vol. 1, p. 238. Quoted by Westermarck, Human Marriage, New York, 1921, vol. 2, p. 6.

[7] P. Amaury Talbot, In the Shadow of the Bush, London, 1912, pp. 106–107.

[8] John Hanning Speke, Journal of the Discovery of the Source of the Nile, London, 1863, p. 231.

[9] D. Livingstone, Missionary Travels and Researches in South Africa, New York, 1858, p. 186, quoted by Westermarck, op. cit., loc. cit.

and with the Hamitic pastoral peoples who have established themselves as the rulers of the Negroes. Admiration of female obesity is not, however, confined to Africa.[1]

The second interesting feature of Galindo's account of Gran Canarian marriage is the alleged existence of the *jus primae noctis*, or the right of the king or the chief to enjoy a bride on her wedding night.

Chil, on the authority of Gomez Escudero, says that the vestal virgins left their convents only to be married and that the following preliminaries were essential:

> Antes de que este caso llegase, el Rey, alguno de ses parientes ó un noble, segun á aquel pareciera, habia de conecerla primero, y al dia siguiente la entregaban á su marido, y ambos le reconocian por padrino, siendo tenido el primer hijo que habian en más consideracion que los que despues naciesen. Cuando el Soberano iba de viaje y se hospedaba en alguna casa, el dueño de ella tenia que ofrecerle su mujer ó sus hijas: el no aceptar alguna de ellas, era mirado como un gran desaire; pero en el caso contrario, sí de aquellas relaciones resultaba alguna descendencia, no solo era noble el hijo que entonces nacia sino que participaban del mismo honor todos los que tuviese despues. Cedeño confirma esto mismo, y añade que cuando el Guanarteme queria ennoblecer à un niño le tomaba de la mano, y por este solo hecho se le consideraba como padrino. Así fué como al tiempo de la conquista, el Rey de Gáldar tenia cuarenta y dos hijos bartardos habidos en varias mujeres, y una sola hija legítima.[2]

This passage is instructive in several ways. It not only confirms the statements of other authorities as to the existence of the *droit de seigneur*, but it also suggests that wife-lending may have been practised in Gran Canaria, as it is said to have been in Gomera. Moreover it is apparent from this passage that nobility came through the male line or was conferred by the king, whereas there is ample evidence that the kingship was inherited through the female line.

According to Cadamosto, the *jus primae noctis* prevailed also in Tenerife, where no maiden was taken to wife till she had passed a night with the chief: this was regarded as a great honor. Among the Ballante of the Senegal, the king is said to have the *droit du seigneur*,[3] and the same right belonged to the chief of the Bagele in Adamawa,[3] and, in the days of Herodotus, to the king of the Adyrmachidae, a Libyan tribe reckoned to Egypt.[3] Westermarck himself heard from two Berbers in the eastern part of Morocco, near Ujda, that among their neighbours, the Ath Zíḥri, it is the custom for the chief of the village to be sent for secretly by the bridegroom's family to have intercourse with the bride the first night, unless she be a widow or a divorced wife. The Ath Zíḥri themselves were said to deny this practice. According to Mouliéras, the person who performed this duty belonged to the caste of spiritual leaders of the tribe. A somewhat similar custom was reported to Westermarck concerning the Beni Ulîd, an Arab-speaking mountain tribe near Fez.[4]

[1] Westermarck, op. cit., loc. cit., records a similar ideal of beauty among the natives of Guiana in South America, the Chuckchi of Northeastern Asia, the Kirghiz of the Asiatic steppes, and the Tongans in Polynesia.

[2] Chil, op. cit., vol. 1, p. 474.

[3] Westermarck, op. cit., vol. 1, p. 168, citing Marche, Trois voyages dans l'Afrique Occidentale, p. 70; Barth, Reisen in Nord- und Central Afrika, vol. 2, p. 571, n.; Herodotus 4, 168.

[4] Op. cit., loc. cit., and citation from Mouliéras, Une tribe Zénète anti-musulmane au Maroc (les Zkara), p. 85.

The *jus primae noctis* seems, then, to have been an ancient Libyan practice, survivals of which persist among the modern Berbers. But this custom has so wide a distribution in other parts of the world that its occurrence in the Canary Islands in antiquity can not be considered ethnologically significant.

Although most of the writers state that the ancient people of Gran Canaria were monogamous, there are some evidences that this is incorrect. A certain Pedro Lujan, writing some time after the conquest, in a work called " Dialogos Matrimoniales," said that a Canarian woman was wont to marry five husbands. This statement is denied by Galindo, Gomez Escudero, Cedeño, and other early authorities. Polyandry certainly was practised at Lanzarote and an associated custom, female infanticide, seems to have been in vogue in Gran Canaria. Gomez Escudero says:

> Tuvieron ley de matar todas las ninâs que tuviesen, como no fuese primera en el primer parto, por haber venido á número de catorce mil familias y ser años estériles, mucho antes de la conquista.[1]

Cedeño, who visited the island at the same time as Escudero (1477), does not mention this custom, but Galindo says:

> Más antes el multiplicarse tanto la femenina generacion dió ocasion á los canarios que hiciesen estatuto y ley de matar todas las criaturas hembras que naciesen, como no fuese los primeros partos que reservaban para su conservacion.[2]

Marin y Cubas makes a similar statement, probably drawn from the same source. Chil discredits this statement, apparently because it is incompatible with his conception of ancient Canarian domestic virtues.

Female infanticide is sometimes practised, from economic motives, in poverty-stricken and over-populated countries and there is no valid reason for doubting the correctness of the record in Gran Canaria. Among the ancient Arabs fraternal polyandry has been traced to a combination of poverty and female infanticide.[3] The occurrence of female infanticide then renders more credible the report of polyandry in Gran Canaria, since the two customs are often associated. Nevertheless the existence of one does not prove the existence of the other.

Significance of the name " Canaria." Pliny says that the island of Canaria is so called from the multitude of large dogs therein, two of which were brought back by King Juba.[4] Galindo thinks that this statement is not well founded, since one would expect the dogs to have multiplied since the time of King Juba, whereas, on the contrary, the first Europeans who visited the islands found no dogs at all. An even more interesting statement of Pliny is to the effect that Suetonius Paulinus, having traversed the Atlas range, came to a river called the Ger:

[1] Quoted by Chil, op. cit., vol. 1, p. 468.
[2] Galindo, vol. 2, ch. 3, quoted by Chil, op. cit., loc. cit.
[3] Westermarck, op. cit., vol. 3, p. 190, citing Barton, Sketch of Semitic Origins, p. 71.
[4] Natural History, bk. 6, ch. 36.

Qui proximos inhabitent saltus, refertos elephantorum, ferarumque, et serpentium omni genere Canarios appellari. Quippe victum eius animalis promiscuum his esse, et dividua ferarum viscera.[1]

Of this passage Galindo — or rather Glas's translation of Galindo — says:

For Pliny was certainly misinformed when he related, that the Canarii bordering upon the Peroesi Ethiopians, were so called from their living in fellowship with dogs, and sharing with, and devouring like them, the bowels of wild beasts.[2]

However, the passage means rather that the Canarii were so called because they ate the flesh of that animal (i. e., the dog). It is very curious that a people who were called Canarii should have lived on the mainland so near the island of Gran Canaria, and that they should have been addicted to cynophagy. It leads one to speculate as to the possibility of such a practice giving its name to the inhabitants and to the island of Gran Canaria. The custom of cynophagy exists in North Africa today in spite of the prohibition of the Koran. Bertholon, who has made a particular study of the subject, states that it occurs especially on the littoral of the two Syrtes and in the oases of Tripoli, Tunisia, and Algeria.[3] Among the Negro tribes dog flesh is commonly considered a delicacy and is a regular part of the dietary.

In the region of Gabes this custom is especially prevalent. In Tripoli dog flesh is sold in the butcher shops. In the interior and in the oases cynophagy is found at Souf, Djerid, in the Fezzan, at Ghat, Ghadamès, Touat, and Mzab. It is also practised in Siwah Oasis.[4] Here dog flesh is eaten for fattening purposes and also as a cure for syphilis. This latter purpose and the prevention and cure of fever seem to be the therapeutic grounds for the custom. Bertholon states that the custom was noted by Edrisi in the south of Algeria in 1207, by Aboulfeda in 1189, and by Al-Mokaddasi, an Arab geographer of the tenth century. The custom is, of course, pre-Islamic, as is proved by the following passage from Justinus:

Legati a Dario, Persarum rege, Carthaginem venerunt, afferentes edictum, quo Poeni, humanas hostias immolare et canina vesci prohibebantur.[5]

In Carthage it appears that dogs were sacrificed to the goddess Tanit.[6] The worship of the dog was, of course, one of the Egyptian practices. Griffith states that there were two types of canine deity in Egypt, the leading representatives of which were Anubis and Ophois, the former type symbolized by a recumbent animal and the latter by one in a stiff standing attitude. The recumbent type represented the beneficent gods of the necropolis, and the standing type, warlike deities. The Greeks reported that dogs were sacred to Anubis and wolves to Ophois. The cult of Anubis was universal. He was the principal god in the

[1] Natural History, bk. 5, ch. 1.
[2] Galindo, op. cit., p. 64. The Canarians had dogs according to Bontier and Le Verrier also.
[3] Bertholon, op. cit., p. 561.
[4] Oric Bates, op. cit., p. 177.
[5] Justinus, History, bk. 19, ch. 1. (Quoted by Bertholon, op. cit., p. 563.)
[6] Berger, Les ex-voto du temple de Tanit à Carthage, p. 19. Cf. Movers, Die Phoenizier, vol. 1, p. 405. (Cited by Bertholon, op. cit., loc. cit.)

capitals of the XVIIth and XVIIIth nomes of Upper Egypt, and a secondary god in the XIIIth and probably in the XIIth nome. He was the god of the dead, of the cemeteries, of embalming.[1]

It is supposed that Anubis, who, properly speaking, was a jackal god, was first venerated in connection with the dead because of the habit, which is characteristic of these scavengers, of haunting cemeteries.

Pliny mentions some Nubian peoples on the west side of the Nile who had a dog for a king:

> At ex Africa parte Ptoembari, Ptoemphanae, qui canem pro rege habent, motu eius imperia augurantes.[2]

In the same chapter among other fabulous people we hear of the "Cynamolgi, caninis capitibus." According to Agatharchides[3] the Cynamolgi were so called because they lived on dog's milk: *τὰς τῶν κυνῶν θηλείας ἀμέλγοντες, τῷ γάλακτι τρέφονται.*

In the Gold Coast the jackal is venerated at Ussue, Akkra, and Ningo. At Ningo he has a temple erected for him in which offerings are put out nightly. Sometimes he is considered the repository of the souls of the dead. Among the Maravi on Lake Nyassa the souls of bad men go into the bodies of jackals after death.[4] Among the Tshi-speaking peoples of the Gold Coast the flesh of the dog is considered a great delicacy, but members of the Dog Family must abstain from it.[5]

The sacrifice of dogs in Africa is not confined to the ancient inhabitants of Carthage. It seems to be considered an especially efficacious offering in the case of illness. Among the Ovambo of South Africa the most efficacious cure for illness was the offering of a dog to ancestral spirits. The liver, heart, and kidneys of the animal were roasted in ashes and eaten by the patient. The flesh was cooked and a part was offered up to the spirits and the rest was eaten by the guests. Among the inhabitants of Kaffa, in Abyssinia, dogs were offered to river spirits by drowning them. On the West Coast when prominent persons were ill, dogs were sometimes offered as a substitute for human sacrifice. In Borgu black dogs were annually sacrificed to animal divinities.[6]

In the Canary Islands there is no direct reference among the early authorities to cynophagy nor to the worship of dogs. But Azurara says that the inhabitants of Gomera "ate filthy things, such as rats and vermin." And the people of Hierro ate the large lizards which were common in their island. Bontier and Le Verrier say that the inhabitants of Canaria possessed " a kind of wild dog like a wolf, but small."[7]

[1] F. L. Griffith, Anubis, Encyclopaedia Britannica, 11th ed., vol. 2, p. 157.
[2] Pliny, Natural History, bk. 6, ch. 35.
[3] Agatharchides, Periplus Rubri Maris, ch. 29.
[4] J. Weissenborn, Tierkult in Afrika, Internat. Archiv für Ethnog., 1904, vol. 17, p. 101. (Citing Isert, Reise nach Afrika (1790), and Waitz, Anthrop. d. Natürvölker, vol. 2, p. 419.
[5] Ellis, op. cit., p. 206.
[6] Weissenborn, op. cit., p. 135 and references.
[7] Op. cit., p. 131.

Galindo says that the devil appeared to the Gran Canarians " in the shape of an animal resembling a shock dog," and of the inhabitants of La Palma that " the devil sometimes appeared to the natives in the shape of a shock dog, whom they called Irvene." [1] The Guanches of Tenerife had small dogs called *canchas*, and Espinosa says that, when the natives were dying by hundreds from pestilence and as a result of fighting the Spaniards, these dogs, which had been neglected, ate the bodies and became so fierce that they would attack the living, so that the natives when travelling climbed into the trees to sleep in order to escape them.[2]

According to Dr. Marin y Cubas, the Guanches of Tenerife used to make pilgrimages to the burial places of their ancestors and especially to the Peak of Teyde, where the devil was supposed to dwell. The latter ordinarily appeared to them in their sacrifices in the form of a large and woolly dog:

> Hacian largas romerías á visitar los huesos de sus sepulcros, en todo semejantes á los Canarios, y en particular habíalos más frecuentes en el pico del Teide, y tambien juraban por los huesos de sus antepasedos, á modo de venganza ó pleito homenaje: en sus sacrificios se les aparecia el demonio en varias apariencias, y lo ordinario en la de perro grande y lleno todo de lana, llamaban Cancha y Gucancha.[3]

This passage seems to associate a canine deity both with ancestor worship and with sacrifice. Even more important is the derivation which it suggests for the word " Guanche." The ordinary derivation of the word is that given by Viera y Clavijo. He states that the island of Tenerife was once governed by a monarch called Tinerfe the Great, and that the name " Guanches," by which the Spanish distinguished the inhabitants of Tenerife, is a syncopation of the word *Guanchinerfe*, *guan* meaning man.[4] This or a similar derivation has been accepted by most writers on the subject. However, Marin y Cubas himself says that the natives called their island *Chinechi* or *Binchini*, and that its inhabitants were called " Guanches " from *Guancha*, meaning dogs; which was the name given to the demon that appeared to them in this form, large and woolly.[5]

Espinosa says that the name Tenerife was given to the island by the natives of La Palma, *tener* meaning snow, and *fe*, mountain.[6] Galindo makes a similar statement and adds that the natives called it *Chinechi* and themselves *Vinechi*.[7] Galindo, however, thought that *thener* meant mountain and *ife* white. If this name is a designation given by the inhabitants of La Palma and means " white mountain " it cannot be the name of a king. The derivation of *Guanche* from *Guanchinerfe* is almost certainly incorrect. Nor does the derivation adopted by Abercromby from Nunez de Peña — *(g)wa-n-Chinet* " he of

[1] Galindo, op. cit., pp. 65, 139.
[2] Espinosa, op. cit., p. 108.
[3] Chil, op. cit., vol. 2, p. 32, citing Marin y Cubas, vol. 2, ch. 20.
[4] Viera y Clavijo, op. cit., vol. 1, p. 62, cited by Chil, op. cit., vol. 1, p. 328.
[5] Marin y Cubas, op. cit., loc. cit., cited by Chil, op. cit., vol. 1, p. 329.
[6] Espinosa, op. cit., p. 20.
[7] Galindo, op. cit., p. 146.

Chinet" = Guanche — seem altogether convincing.[1] I do not feel competent to pronounce upon questions of etymology, but to me it appears something more than a coincidence that Guanches and Canarii should be native and Latin equivalents, both referring to people in some way connected with dogs. The natives of Gran Canaria evidently were "Guanches" also, for the root "*guan*" occurs in Gran Canaria as a place name and as a proper name almost as often as in Tenerife, and the kings of Gran Canaria were called *guanarteme*.

The flesh of dogs is eaten today in North Africa by the people of Gerba, Tunis, Tripoli, Fezzan, and the inhabitants of the oases. This practice was undoubtedly more widespread before the introduction of Islam since to Mohammedans the dog is an unclean animal. Among the Negroid tribes the dog is eaten in the interior of Liberia, on the Gold Coast, in Northern Nigeria, and in the Congo region.[2] Probably a careful survey would reveal the extension of this habit over a much wider area than is mentioned here, but for the present purposes it is sufficient to note that the custom is a very common one. Moreover the veneration of dogs and even the worship of dogs is known to have existed in some parts of North Africa in ancient times and the flesh of dogs is considered especially efficacious for certain diseases. In antiquity dogs were often used as sacrificial animals and both the sacrifice and worship of dogs may still be found in many Negro tribes. In view of these considerations it is highly probable that the island of Gran Canaria may have been so named because of the previous existence of the practice of cynophagy among its inhabitants, or because they had some religious cult of the dog, or for both reasons. The fact that Galindo speaks of the devil appearing as a dog in both Gran Canaria and La Palma, while Marin y Cubas makes a similar statement concerning Tenerife, may possibly indicate the submergence of the dog cult by a later form of worship. Discarded deities, like fallen angels, often become devils. It is interesting to note that Anubis, the jackal god, was particularly connected with the cult of the dead in Egypt and with embalming, a practice notably a feature of ancient Canarian culture. Altogether it seems likely that when Pliny spoke of people on the mainland beyond the Atlas range, who were called Canarii because they ate dogs, he hit upon the real reason for the name which was given to one of the Fortunate Isles. The people of the island of Gerba and of the oases, especially Mzab, belong to a brachycephalic stock or are intermixed with a short brunet brachycephalic stock which is almost certainly represented in the ancient populations of the Canary Islands, especially in Gomera. Fattening women and eating dog seem to have been habits of these brachycephals. The Canarians may not have eaten dog at the time of the discovery and may have had no cult of dog-worship or dog-sacrifice, but our contemporary evidence is so scanty that this question cannot be decided.

[1] John Abercromby, A Study of the Ancient Speech of the Canary Islands, Harvard African Studies, vol. 1, p. 102.

[2] Sir. H. H. Johnston, Liberia, London, 1906, vol. 2, p. 1000. A. B. Ellis, The Tshi-Speaking Peoples of the Gold Coast, loc. cit. A. J. N. Tremearne, The Tailed Head-Hunters of Nigeria, London, 1912, p. 242. Sir. H. H. Johnston, George Grenfell and the Congo, London, 1908, vol. 2, p. 614.

GRAN CANARIA: REMARKS ON MATERIAL CULTURE

Habitations. The inhabitants of Gran Canaria were much more advanced in their material culture than the dwellers in the remaining islands. They lived not only in natural caves, but also in carefully excavated artificial caverns and in fairly well-built houses. The best known and most elaborate of the artificial caves is that of the Four Doors. This is cut in the side of the mountain. In front of the cave a level terrace has been carved out, and the four rectangular entrances are separated from each other by massive pillars left in the solid rock. Inside the entrances the walls converge toward the rear, and the roof slopes downward. The breadth of the chamber at the entrance is about 16 meters and at the rear about 12 meters. The chamber is 6 meters deep and the height of the ceiling is about 2 meters near the entrance and 1.75 meters at the rear. The walls are well cut, but there is no decoration.[1] Verneau mentions another artificial cave near Galdar, which is ornamented inside with a convex cornice at the top and below it with a plane cornice. The ceiling is painted red and the walls were evidently painted. The cornices are also painted red and the upper one is decorated with six circles picked out in white, each of which has a smaller white circle within it. The lower cornice is ornamented with oblique parallel bands and concentric circles in white. The walls are ornamented with zigzags, chevrons, triangles, squares, and circles, painted in red, black, and white.[2] Other artificial caves with painted walls of a similar nature have been found.

The houses of the Canarians have been described by ancient and modern authorities. Verneau says that they are usually built of large rectangular stones well assembled in thick walls, but without mortar. Sometimes the walls are as much as 2.50 meters thick. The regularity of the blocks is surprising. The record of the Florentine, preserved by Boccaccio, describes a visit to the island in 1341:

> The buildings were made with much skill of square stones, covered with large and handsome pieces of wood. Finding several of them closed, the sailors broke open the doors with stones, which enraged the fugitives, who filled the air with their cries. The houses were found to contain nothing beyond some excellent dried figs, preserved in palm baskets, like those made at Cesena, corn of a much finer quality than the Italian, not only in the length and thickness of its grain but its extreme whiteness, some barley and other grains. The houses were all very handsome and covered with very fine wood, and as clean inside as if they had been whitewashed. The sailors also came upon a chapel or temple, in which there were no pictures or ornament, but only a stone statue representing a man with a ball in his hand. This idol, otherwise naked, wore an apron of palm-leaves. They took it away and carried it to Lisbon.[3]

Verneau says that the roofs of the houses were made of heavy pine rafters resting upon the walls and very well joined. These were covered with boughs, above which were placed leaves, then earth, and finally thin slabs of stone. The houses were usually low with a single narrow entrance, and were circular or elliptical in shape. The handsomest house in the

[1] Verneau, Rapport, pp. 739–741.
[2] Verneau, op. cit., pp. 741–743.
[3] Bontier and Le Verrier, Introduction, pp. xv–xvi.

island was that of the *guanarteme* at Galdar. Its walls were 2.50 meters thick. Inside, the walls were panelled with beautifully polished and joined pine boards, decorated with paintings. This house was destroyed at the end of the eighteenth century. The interiors of the houses were sometimes divided into several apartments or alcoves. The hearth was always near the door, as there were no windows or chimneys.[1] The floors were usually a little below the ground level.

Navigation. All the early writers agree that the inhabitants of the Canary Islands had no knowledge of navigation at the time of the discovery. In view of the absence of any geological evidence indicating the presence of a land bridge between the islands and the mainland of Africa in recent times, it is hard to see how the archipelago could have been peopled except by the use of boats. The islands contained plenty of pine trees suitable for boat building and in Tenerife the Guanches made dug-out coffins from solid logs by the well-known primitive process of burning and scraping. Two factors may have discouraged the natives from building and using boats: the absence of metal and of hard stone for implements, and the lack of harbor facilities combined with the heavy and dangerous surf which usually beats upon the rocky shores.

A passage in the narrative of Bontier and Le Verrier implies that the Gran Canarians used boats at the time that Gadifer, the companion of Bethencourt, visited them in 1404.

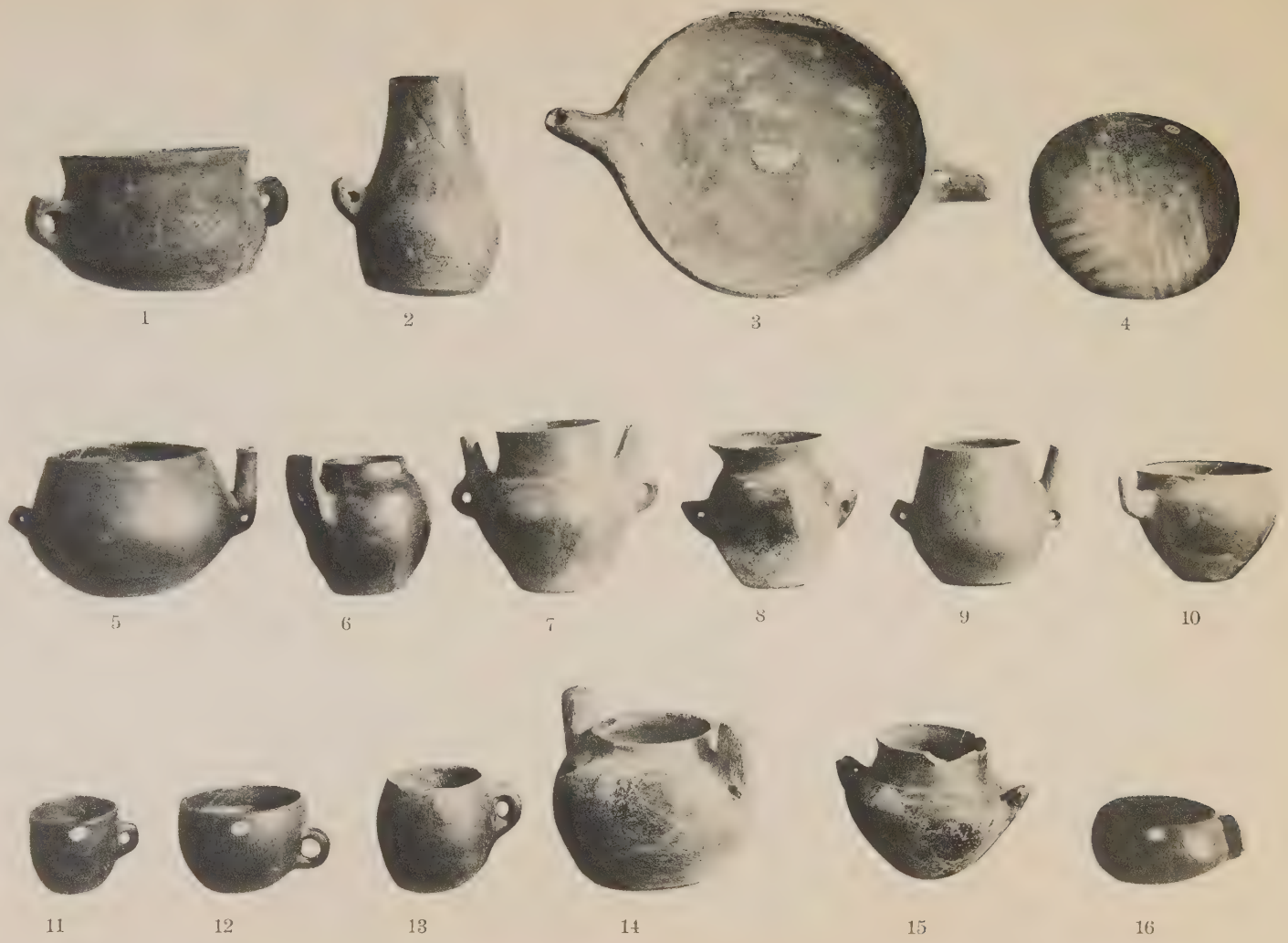
> They then quitted Erbanie, and arriving at the Great Canary at the hour of prime, they entered a large harbour, between Feldes and Argonnez, where about five hundred Canarians came out to speak with them, two-and-twenty of whom were persuaded to come on to the vessel and exchange figs and dragon's blood for fishing hooks, old iron, and little knives. . . . When they had gone away and their boat was near the shore, they began quarreling, and the commotion lasted for a long time. When it was over, they put out to sea again, and came to the bark as before, bringing their articles of traffic, and this lasted all through the two days that the ship remained there.[2]

Possibly the boat used by the Gran Canarians may have been procured from some of the Europeans who, from time to time, visited the islands. But I do not credit the accounts of the early writers which say that the islanders had no communication with each other except by swimming. The passage above plainly attributes the use of boats to the Gran Canarians. Probably there was little communication between the islands, and a comparatively slight use of boats was made because of the great danger attending the use of small craft in these waters. The inhabitants of the Canary Islands almost certainly arrived in boats, unless one wishes to resort to fanciful hypotheses which regard them as the remnant of the inhabitants of the fabulous sunken continent of Atlantis, or to postulate in recent times the existence of a land bridge between the Canaries and Africa for which there is no geological evidence.

Pottery. The pottery of Gran Canaria is distinguished from that made in the other islands of the group by its generally superior quality and greater variety of form, and by

[1] Verneau, op. cit., loc. cit.

[2] Bontier and Le Verrier, op. cit., pp. 70–71.



GUANCHE POTTERY FROM GRAN CANARIA

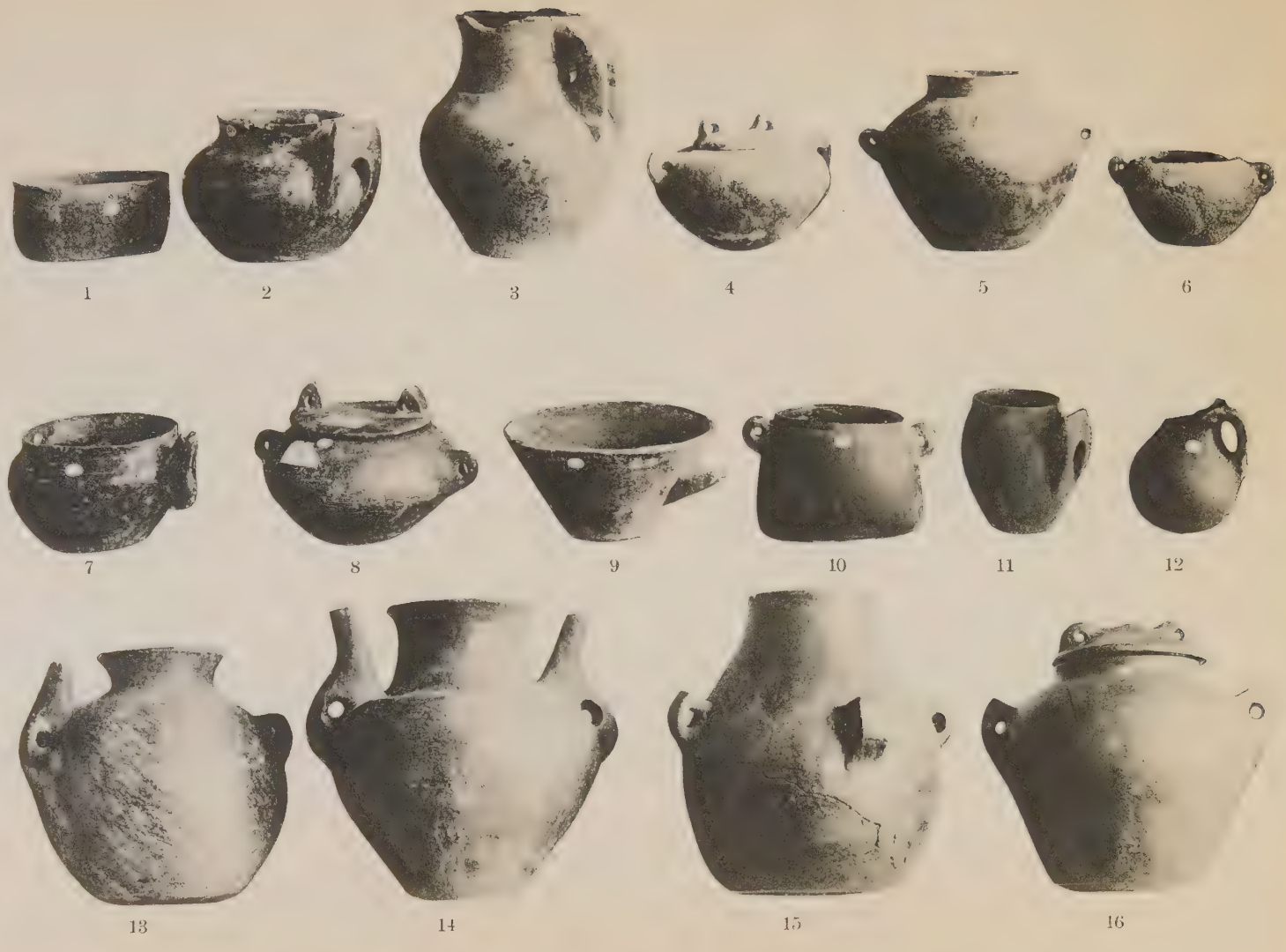
(From Photographs of Lord Abercromby)

Courtesy of the Royal Anthropological Institute

GUANCHE POTTERY FROM GRAN CANARIA

(From Photographs of Lord Abercromby)

Courtesy of the Royal Anthropological Institute



GUANCHE POTTERY FROM GRAN CANARIA

(From Photographs of Lord Abercromby)

Courtesy of the Royal Anthropological Institute

Fig. 1. Front

Fig. 2. Side

Fig. 3. Back

Female ? Clay Figurine from Gran Canaria. Height 26 cm.; Shoulder breadth 17 cm.; Breadth at Base 24 cm.

(From Photographs of Lord Abercromby)

Courtesy of the Royal Anthropological Institute

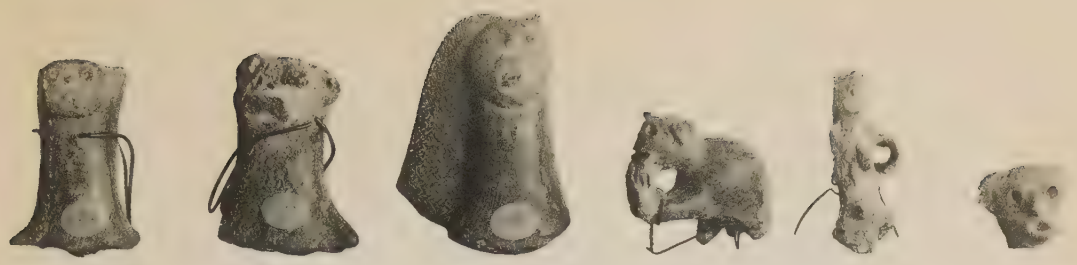


FIG. 1. CLAY FIGURINES, GRAN CANARIA

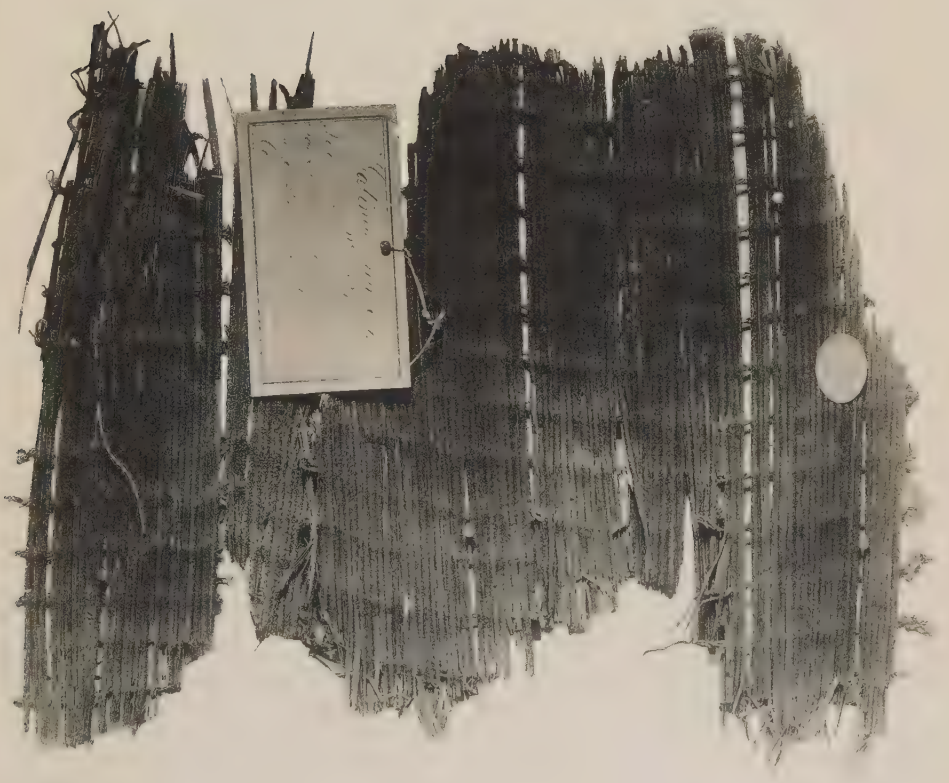


FIG. 2. MAT, STA. LUCIA DE TIRAJANA, GRAN CANARIA

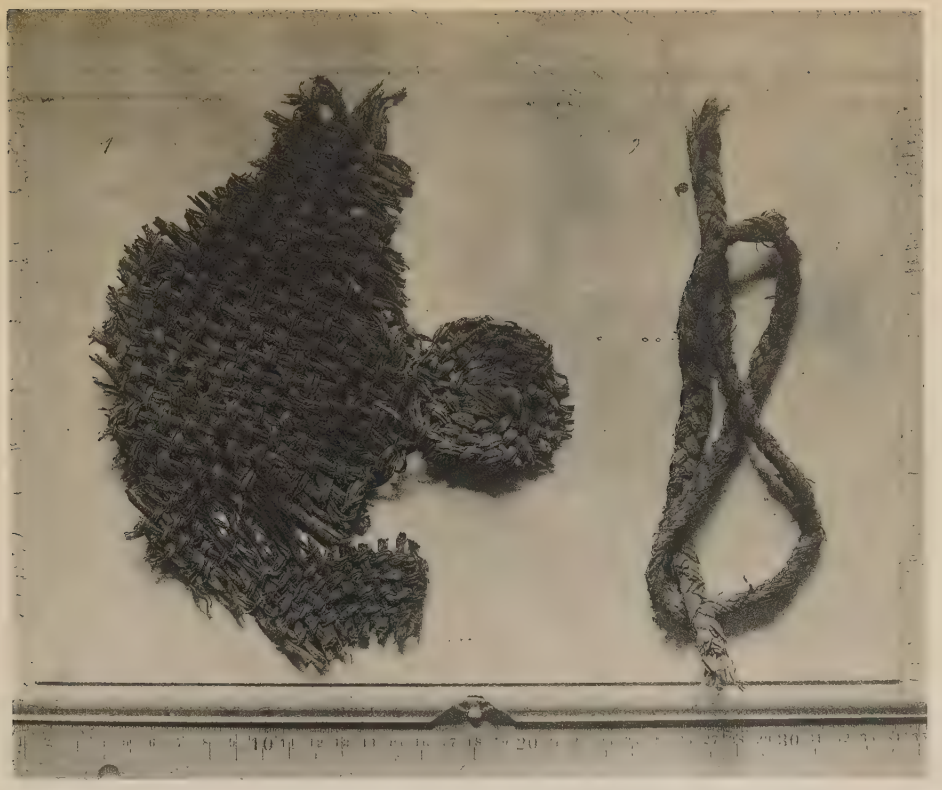


FIG. 1

FIG. 2

TEXTILES FROM GRAN CANARIA

the fact that it is often painted and never incised. Lord Abercromby has made a careful study of the pottery of the islands and it is unnecessary to deal with the subject here.[1] Plates (14–18) showing examples of Gran Canarian pottery are reproduced from Lord Abercromby's photographs. The pottery stamps which were used by the natives, presumably for stamping designs on the body, are not found in any of the other islands of the group. (Plate 13, fig. 4.) Many of these *pintaderas* are figured by Verneau, who compares them with the similar objects found in the Valley of Mexico.[2] It is not necessary to go so far afield for comparisons since pottery stamps, evidently used for printing designs in red ochre on the body, have been found in several places in the Mediterranean area. They occur in Italy in the Ligurian caves where they are very common, in a hut at Campeggine (Reggio), and in one example of uncertain provenience near Bari. They are also found in the tumuli of Phrygia and in the Eneolithic settlement of Priesterhügel near Brenndorf; one example in the museum at Vienna comes from a cave near Duino, on the eastern coast of the Adriatic. A probable *pintadera* has been found in a Serbian site, and another of bone, accompanied by fragments of red ochre, in a cave of Derbyshire.[3] All of these European *pintaderas* are probably of Neolithic or Eneolithic date. Since the *pintaderas* are found only in Gran Canaria, it seems reasonable to conclude that these pottery stamps and the generally more advanced ceramic industry of that island are due to a contact with the Mediterranean world which was not shared by the other members of the group. The occurrence of *pintaderas* in North Africa or in the Iberian peninsula seems questionable and the distribution of these objects makes it probable that they are a feature of a Balkan culture. Of course it is conceivable that the Canarians invented *pintaderas* themselves as the Indians of the Valley of Mexico may have done. But it is more likely that their use in the island was due to trade with, or colonization by, Mediterranean seafarers.

Tombs. In addition to the cave burials common to all of the islands, the people of Gran Canaria sometimes buried their dead in simple trenches or under tumuli. Verneau says that the earthen tumuli usually cover multiple burials, each body separated from its neighbors by slabs of stones set upon edge. Usually the tumuli that are made of volcanic scoriae cover but one body.[4] Galindo says of this kind of burial:

> The lower class of people were buried in the Mal Paices, in holes covered with dry stones; and, excepting those bodies which were placed upright in caves, all the others were laid with their heads toward the north.[5]

One is inclined to regard this orientation as an evidence of the southern origin of the population, but Verneau denies the invariability of such disposition. Glas gives the following rendition of Galindo's description of a form of burial also practised in Gran Canaria:

[1] Abercromby, op. cit.
[2] Verneau, op. cit., pp. 771–785.
[3] T. E. Peet, The Stone and Bronze Ages in Italy and Sicily, Oxford, 1909, p. 162 and references.
[4] Verneau, Cinq Années de Séjour aux Îles Canaries, p. 82.
[5] Galindo, op. cit., p. 74.

But if no proper cave was at hand, they carried the dead body to one of those stony places now called Mal Paices, where, levelling the ground and fixing the small loose stones, they made a coffin of very large ones, placed so as not to touch the body; they then took another stone, two yards in length, wrought into a round form, and with this they closed the coffin, and afterwards filled up the nich between the top of the round stone and the outer part of the sides of the coffin with small stones, in so neat a manner, that every one who beholds them must be surprised at the ingenuity of this people.[1]

Verneau states that M. Diego Ripoche saw at Agaete large tumuli of scoriae, surmounted by much smaller tumuli. These tombs were circular in form, with the exterior walls vertical and composed of well-fitted blocks. On the flattened summit was a smaller circular structure composed of stones alternately yellow, red, and black. The interior was filled with stones. A cut of this monument is reproduced in Verneau's work.[2] Verneau also reports that another observer saw similar monuments, square or semicircular in form. The exterior stones were carefully aligned, and inside was a second alignment of blocks, square or semicircular, according to the exterior shape. The centre was filled with small stones. A sort of dome made of three red stones covered the whole. There were also small dome-like structures about 1.50 meters in height placed at one side of the large heap of stones which covered the body.

Both the account of Galindo and Verneau's description of the dry-stone tumuli in Gran Canaria indicate that they are indistinguishable from the stone tombs of the Sahara which are called *ardjem*.[3] These are made of piles of stones disposed in a more or less orderly fashion and approximating to dry-masonry construction. The simplest form is a truncated conical pile of stones heaped upon each other in a random fashion. The bones and funeral furniture are on the ground level covered with stones. Usually the summit presents a little crater due to the falling in of the stones over the body after decomposition. A slightly more elaborate type has the same form, but surmounts a trench dug in the original ground surface. A much more evolved type is represented by a *redjem* at Ain Sefra, in the Algerian Sahara, described by Gautier. The structure is 8 meters in diameter and 2.20 meters in height. In the middle, dug out of the ground, is a circular burial chamber covered with sandstone slabs. Above the chamber are traces of another structure which has collapsed. The base and sides of the *redjem* are composed of slabs laid in courses so as to form steps. In the Adr'ar the *redjem* has evolved into a turriform monument, cylindrical in shape. The walls are thick and are constructed of dry masonry, usually 1 meter to 1.20 meters in height. This is evidently the type of tomb described and figured by Verneau. An oblong type with rounded corners occurs in the Wady Tougcemin, and is figured by Gautier.[4] This corresponds, apparently, to the form of dry-stone tomb described by Galindo. The *ardjem* with central cists are found particularly in the Atlas region. The turriform type is found in the southern

[1] Op. cit., loc. cit.
[2] Verneau, op. cit., p. 83, fig. 7.
[3] E. F. Gautier, Études d'Ethnographie Saharienne, L'Anthropologie, Paris, 1907, vol. 18, pp. 37–54.
[4] Op. cit., p. 45, fig. 3, no. 7.

Sahara and also in Algeria. These are undoubtedly pre-Islamic Berber tombs, and the occurrence of practically identical structures in Gran Canaria is another evidence of the kinship of the ancient inhabitants of this region with the Southern Berbers.

GOMERA: CUSTOMS

Marriage. Information concerning the ancient inhabitants of Gomera is very scanty. They were undoubtedly on a somewhat lower level of culture than the Gran Canarians and the Guanches of Tenerife. One of the most interesting bits of knowledge is contributed by Azurara:

> Their women were regarded almost as common property, for it was a breach of hospitality for a man not to offer his wife to a visitor by way of welcome. They made their sisters' sons their heirs.[1]

The practice of wife-lending is so common among primitive people that it has little ethnological significance. Westermarck says that in Africa it has been found among the Masai, A-kamba, Nandi, Wasania, Baganda, and Banyankole, of East Africa; the Basutos and Kafirs of South Africa; and the Baya and Yoruba of West Africa.[2] There is apparently no record of the practice among the whites of North Africa. In Gran Canaria this favor seems to have been restricted to the king and possibly to the nobles, and is entangled with the *droit de seigneur*. The Gomerans probably represented one of the earliest strata of the of the population of the islands and the custom prevailed here, as is natural, in connection with matrilineal descent. It is highly probable that matrilineal descent had been replaced by patrilineal descent in Tenerife and Gran Canaria with the advent of the blond element which afterwards composed the nobility, the kingship alone being inherited through the female line. It is evident that the blond stock was not as numerous in Gomera and Hierro as in Tenerife, Gran Canaria, and La Palma; but certainly some of this stock was present.

It is impossible to be certain of anything further than this in regard to marriage among the Gomerans, although the further statement of Azurara, "em fornizyo poem todo sua bem aventurança ca nom teem ensinança de ley," while it does not necessarily imply promiscuity, can scarcely constitute evidence in favor of monogamy.

Whistling language. Among the inhabitants of Gomera there exists today, and apparently has existed since prehistoric times, a whistling language. Bontier and Le Verrier say:

> This country is inhabited by a tall people who speak the most remarkable of all the languages of these islands, and speak with their lips, as if they had no tongues; and they have a tradition that a great prince, for no fault of theirs, caused them to be banished and had their tongues cut out; and judging by the way they speak, one could well believe it.[3]

[1] Bontier and Le Verrier, op. cit., introduction, p. xxxii.
[2] Westermarck, op. cit., vol. 1, p. 226, note and references.
[3] Bontier and Le Verrier, op. cit., p. 127 sq.

And Espinosa says concerning the peopling of Tenerife:

> Others say that they are descended from certain tribes in Africa, who rose against the Romans and killed their praetor, or judge. As a punishment for this, instead of killing them all, some had their tongues cut out, so that, having no pens or paper, they could not hand down an account of the rising. They were then put into boats without oars, and committed to the sea and to their fate. These exiles came to the islands and peopled them.[1]

These statements are of value only because they demonstrate the existence of the whistling language in Gomera and perhaps in Tenerife, before the conquest. Aside from frequent references by the early writers to the use of whistling in war and for signalling purposes in all of the islands, these passages constitute our only early evidence on the subject. Much, however, has been written concerning the modern whistling. Samler Brown says:

> A custom of the former inhabitants still survives, namely, talking by means of whistling. Not only can a peasant make himself heard at a distance of three or four miles, but a sufficiently rich language has been developed to enable conversation to be carried on.
>
> The town people can rarely do this, but in the country, and especially in the region of Montaña de Chipude, where the best whistlers are said to reside, all messages are sent in this way.
>
> For instance, a landed proprietor from San Sebastian with farms in the south, secretly took lessons. The next time he visited his tenants he heard his approach heralded from hill to hill, instructions being given to hide a cow here or a pig there, and so on, in order that he should not claim his "*medias*" or share in the same.
>
> The same gentleman, when entertaining a foreign tourist in another part of the island, whistled across to his *medianero* to get them a partridge, these birds being so plentiful as to be looked upon almost as vermin. Some little time after, the tourist objected that it was out of season and that, in any case, only a cock should be shot. The next whistle found the *medianero* stealthily creeping toward his prey, but he understood what was said and picked out a male bird.
>
> Other messages that can be vouched for are: "There is a Cabellero here who wants to send a letter to San Sebastian. Tell Fulano to take this place on his way and fetch it." This was understood at once and acted on. . . .[2]

The most careful study of the whistling language in the Canaries today has been made by Lajard.[3] He found its present distribution limited to the islands of Gomera and Hierro. The whistling is done either without placing fingers at the mouth, or with the assistance of from one to four fingers, according to the habit of the speaker. All of the numerous methods of producing the sound have been carefully described by Lajard, who himself took considerable pains to acquire the whistling language, without great success, however, according to his own account. The method used does not affect the language. Lajard says that the language is not in any way connected with music, since each person uses his own register and there is nothing at all melodious about it. This whistling language is not a system of conventional signals; nor is it a separate articulate language. According to Lajard it is nothing but whistled Spanish. The mountaineer whistles and pronounces the syllables at the same time. The whistling is a means of conveying the words to a great distance. Que-

[1] Espinosa, op. cit., pp. 26–27. Cf. Glas quoting Galindo, op. cit., p. 171 sq.

[2] A. Samler Brown, Madeira, Canary Islands, and Azores, London, 1913, pp. *K* 1, *K* 2.

[3] Lajard, Le langage sifflé des Canaries, Bull. Soc. Anthrop. de Paris, 1891, s. 4, vol. 2, pp. 469–483.

denfeldt, however, thought that this whistling was a separate articulate language with a musical basis.[1]

It is apparently very difficult to learn to speak and whistle the syllables at the same time. The adepts say that their ability to express themselves in this way is limited. They told Lajard that they could not, for example, whistle a whole page from a newspaper. Very few old Guanche words are used in the whistling language; thus an intensive study of this language would probably throw little light upon ancient Canarian speech. It is certain that this whistling language is a method of communication devised by the ancient mountaineers for the purpose of communicating with each other from peak to peak across the deep barrancos and chasms which are so plentiful in these islands. Apparently no certain record of a similar whistling language outside of the islands has been found although Brown says that he has heard that one of the tribes of the Atlas uses a similar means of communication. It is altogether probable that the whistling language was used in the days before the conquest in Tenerife, where frequent allusions are made by the early writers to the use by the Guanches of whistling in war and for signalling purposes. Lajard was unable to find anyone acquainted with the art in Gran Canaria.

GOMERA: MATERIAL CULTURE

Slings. The Gomerans are the only islanders of the group who are said to have used slings. Galindo says:

> The natives were of a lively disposition, of a middle stature of body, very active and dextrous in attacking and defending, and excellent slingers of stones and darts, to which exercise they were trained from their infancy, it being the common amusement with the young people to cast small stones and darts at one another, to avoid which they seldom moved their feet, but only waved their bodies to and fro; and so expert were they at this sport, that they used to catch in their hands the stones and the arrows as they flew in the air. As soon as they grew up to manhood, they threw them out of slings. . . .[2]

Slings were used by the Eastern Libyans in antiquity and probably by many of the Berbers. Slingers from the Balearic Islands and from North Africa were often included among the auxiliaries of the Roman armies. Leo Africanus, writing about 1526, describes a Berber tribe of the Atlas that used the sling as a weapon:

> The inhabitants leade a brutish and sauage life, waging continuall warre with their next neighbours: for which purpose they vse neither swords, iauelins, nor any other warlike instruments, but onely certaine slings, out of which they discharge stones after a strange and woonderfull manner. Their victuals consist of barlie, honie, and goates-flesh.[3]

Iron arrow-heads. Several socketed iron arrow-heads found in Gomera are associated with Guanche remains. They are supposed to have come from Africa and may have been later than the Guanche period.

[1] M. Quedenfeldt, Pfeifsprache auf der Insel Gomera, Zeitschr. f. Ethnol., Berlin, 1887, vol. 19, pp. 731–741.
[2] Galindo, op. cit., pp. 21–22.
[3] Leo Africanus, The History and Description of Africa, London, 1896, vol. 2, p. 277. (Translation by John Pory.)

HIERRO: CUSTOMS

Government, social organization, marriage. The principal sources of information concerning the people of Hierro are Bontier and Le Verrier, and Abreu de Galindo. The latter says:

As to their form of government, they all lived under one King, consequently never had occasion to go to war, nor had they any warlike weapon: they used indeed to carry long poles; but these were only to assist them in travelling the country, which is very rocky, so as frequently to oblige them to leap from one stone to another, which they did by the help of these poles. Each man had but one wife; they had no rules in their marriages (except that a man should not marry his mother or sister), for every man married the woman he liked best, and whose consent he could obtain, without any regard to rank or nobility: indeed they were all, except the king, upon an equality in that respect; the only distinction among them was in their substance, which consisted in flocks. It was customary for the man, when he chose a wife, to make a present of cattle to her father according to his ability, as an acknowledgment for his good-will in letting him have his daughter. The King received no stipulated tribute from his subjects; but every one made him a present of sheep, etc., according to his wealth or pleasure, for they were not obliged to give him any thing.[1]

From this passage it is clear that the people of Hierro lived under a simple patriarchal government without any class distinctions, and were unwarlike. Also they were monogamous and contracted marriage by purchase.

Religion. As in the other islands, the principal religious rites in Hierro were designed to produce rain, and the following account by Galindo is of some interest:

They adored two deities, one of them male, and the other female: the male was named Eraoranzan, who was worshipped by the men; the other Moneyba, who was worshipped by the women. They had no images or representations of these deities, nor did they sacrifice to them, but only prayed to them in their necessities, which was when they wanted rain to make the grass grow for the subsistence of their cattle. The natives feigned, that when their gods were inclined to do them good, they came to the island and posted themselves on two great stones or rocks, which are in a place they called Ventayca, but is now named los Antillos[2] de los Antiguos; there they received the petitions of the people, and afterwards returned into heaven. In the winter season, when, by a long continuance of the dry weather, they were reduced to great necessity, and found their prayers were not answered, they assembled together in Ventayca with their cattle, and there held a fast for three days and as many nights, weeping and lamenting, their flocks also making a noise for want of food; if all this did not produce rain, they sent a man, who was esteemed by them as a saint, to a cave called Atecheita, where he invoked the gods to send a mediator; upon which, as they said, an animal like a pig appeared to him, called Aranjaibo (which in their language signifies Mediator); the saint put the animal under his cloak, and carried it to the natives assembled at Ventayca: then they walked in procession, with their flocks, round the two fore-mentioned rocks, lamenting and wailing as they went. My author says, that immediately on this it rained; and accounts for it in this manner, that the animal which appeared to them was the devil, who from his great knowledge and skill in nature caused rain to fall. This he did to blind the natives and attach them to his worhip. After it had rained sufficiently, they let the animal go, which returned to the cave in the presence of all the people.[3]

[1] Galindo, op. cit., pp. 26–27.

[2] A misprint in Glas. It should be Santillos.

[3] Galindo, op. cit., pp. 27–28.

Rain ceremonies similar to this, but without the porcine mediator, are reported in Tenerife by Espinosa and in Gran Canaria by Galindo.

HIERRO: MATERIAL CULTURE

Habitations. The habitations of the people of Hierro are thus described by Galindo:

> They dwelt in large circular enclosures, the walls of which were of dry stone, without cement, each enclosure having one narrow entry; on the inside they placed poles or sparrs against the wall, in such a manner that one end rested on the top of the wall and the other on the ground, at a considerable distance from the bottom of it; these they covered with branches of trees, fern, etc. Each of these enclosures contained about twenty families.[1]

Verneau examined the remains of many of these enclosures but found none larger than 6 to 8 meters in diameter. None of these was of sufficient size to accommodate twenty families or even, as Viera y Clavijo claims, twenty persons.[2]

Agriculture and pottery. The people of Hierro were probably unacquainted with agriculture, although Bontier and Le Verrier say that they had " plenty of grain of all kinds." Galindo and other authorities deny this assertion. Apparently also they made no pottery. At any rate there are no specimens of Hierro pottery in the Las Palmas and Tenerife museums and I find no reference to the pottery of Hierro in the works of Verneau. In these museums are specimens of pottery or potsherds from all of the other islands. Nevertheless the native word *ganigo* " earthen vessel " is given on the authority of Viera in Chil's list of native words from Hierro, and the same author quotes the account of a visit made in 1873 to Los Letreros in Hierro by one Aquilio Padron, in which Padron speaks of finding a shell heap containing fragments of clay pots, badly baked, as well as sheep bones.[3] Chil himself says that the inhabitants of Hierro had sun-dried pottery. The absence of pottery specimens in the best collection of Canary antiquities seems to indicate either that they had no pottery or that it was so rare and so poor that none of it has been preserved.

Rock scratchings and inscriptions. Professor Verneau has made a careful study of the alleged inscriptions which are said to occur at various places in the Canary Islands.[4] The most numerous and important of these, strangely enough, are in Hierro, although the material culture of this island was less advanced than that of any of the other islands, except, possibly, La Palma. For our purposes it will be necessary only to summarize the results of Verneau's researches. Some of the inscriptions have been scratched in the rocks and others have been made by percussion. They may be divided into pseudo-inscriptions of varied and often bizarre form, which are usually made by pecking, and alphabetic inscriptions generally made by scratching.

[1] Op. cit., p. 25.
[2] Verneau, Rapport, p. 738.
[3] Chil, op. cit., vol. 2, p. 53. Cf. also p. 163.
[4] Verneau, Rapport, pp. 786–804.

The pseudo-inscriptions are well represented in the ravine of Belmaco in the island of La Palma. They consist of arabesques, serpentine lines, and spirals engraved on basaltic rock. Verneau says that they bear no resemblance to any known form of writing. A great number of similar rock scratchings are to be found in Hierro at the place called Los Canalos. They consist predominantly of circles and ellipses, with serpentine lines in intricate and apparently meaningless patterns.

The true alphabetic inscriptions are disposed in an orderly fashion, usually in vertical lines. Of forty-one inscriptions known to Verneau only six are arranged in horizontal lines. They consist of simple repetitions of certain alphabetic signs, each usually 5 cm.–9 cm. in height. They are ordinarily so weathered as to be almost undecipherable. Verneau has no hesitation in pronouncing them to be Numidian inscriptions. They are found in Hierro, Gran Canaria, and possibly in Fuerteventura.

In Hierro the alphabetic inscriptions occur in three places: in the ravine of Belmaco amid the bizarre non-alphabetic rock scratchings, in the ravine of Candia, and near the harbor of Caleta. In Gran Canaria they are found only in the ravine called Los Balos. Altogether Verneau found 328 letters in Hierro and 45 in Gran Canaria. By a careful comparison of the Gran Canarian characters with those tabulated by General Faidherbe in his "Collection complète des inscriptions numidiques" Verneau seems to establish the identity of the former with the latter. His opinion is that the Numidians, coming from the neighbourhood of Carthage and mixing with the Semites of the dominant race, reached the Canary Islands and formed an accretion to the population of that archipelago. Apparently the Guanches of Tenerife and the Gomerans were unacquainted with writing. The Anaga inscription of Tenerife has been discussed above (p. 33).

If late-coming invaders, who possessed letters, formed a part of the population of Hierro it is remarkable that they did not contribute some elements of material culture to these most primitive inhabitants of the archipelago. It seems paradoxical to find the largest number of alphabetic inscriptions in the island which apparently had no cereals and whose inhabitants probably were unable even to make pottery. One may be inclined therefore to conjecture that the peoples who made these inscriptions on the rocks of Hierro were perhaps recording their discovery of the island and were not the native inhabitants. Culturally Gran Canaria was furthest advanced of the group and seems to show most distinct traces of external influences and perhaps of foreign admixtures. But these " Semitic " colonists could hardly have been responsible for the inscriptions. Otherwise we should expect the bulk of such writing to be found in Gran Canaria. Perhaps the position of Hierro, as the part of the ancient world farthest west and as the most southerly island of the group, led to the practice among ancient navigators of recording their arrivals at this remote spot just as modern explorers leave records of their arrival at the North and South Poles. Unfortunately these Canarian inscriptions have not been deciphered.

LA PALMA: CUSTOMS

Government, religion, procedure in sickness. The only considerable ethnographic information concerning the early inhabitants of La Palma is that given by Galindo. This friar states that they had no cereals in the island when the Europeans first landed. He thus confirms the account of Bontier and Le Verrier, who say that the inhabitants lived exclusively upon flesh. The following quotation from Glas, after Galindo, contains the main ethnographic facts of interest that are not included in our general outline.

The island was divided into twelve districts, each of which was governed by its own Lord or captain. But their police was not so good as that of the other islands, for he was esteemed the cleverest fellow, who could steal with such address as not to be discovered: if any one happened to be detected in this practice, no other punishment was inflicted on him than being obliged to restore the thing stolen. If a man received an insult from any of his own district, he thought it mean to complain of the injury to his Captain, but avenged his own cause, by gathering together his friends and relations, and retaliating the affront; after which they all removed and took up their residence in another district. Their manner of worship was as follows: in each district there was a great pillar or pyramid of loose stones, piled up as high as possible, and so as not to fall down. There the natives assembled on certain occasions, singing and dancing round the pyramid: there also they wrestled and performed other feats of agility. In one of the districts, instead of a pyramid of loose stones, there was a natural one, being a narrow long rock, upwards of an hundred fathoms high, where the natives worshipped their god Idafe, whose name the rock itself still retains. They were in continual apprehension of its tumbling down; and therefore, whenever they killed a sheep or goat, they roasted a piece of it, which they sent by two persons as a present to the rock. As they went along, he who carried the offering sang these words, "*Y Iguida, y Iguan, Idafe;*" which, in their language, signifies, "It will fall, Idafe." Upon which the other answered in the same tone, "*Gueguerte, y guantaro,*" i. e., "Give to it, and it will not fall:" and then threw down the meat, and both went away; when it was quickly devoured by the ravens which hovered about the rock. . . .

They were extremely alarmed in time of sickness; so that when any one was taken ill, he sent for his friends and relations, and said to them, "*Vacaguare,*" i. e., "I want to die." Upon which they carried the sick person to a cave, where they laid him down upon a bed of goats skins, put a pitcher of milk by him, and then, closing the mouth of the cave, left him to expire by himself.[1]

Character of the women. The people of La Palma were said to be taller than those of the other islands. The women were very courageous.

In another descent of the Hierrons upon this island, they met with a beautiful woman of a gigantic size, named Guayanfanta, who fought with great courage and resolution. This fair warrior finding herself surrounded on all sides by the enemy, so that no way was left for her to escape, suddenly caught up a Spaniard under her arm, and ran with him toward an high and steep precipice with a design to cast herself and her enemy headlong down together; which she would certainly have effected, had it not been for another Spaniard, who coming behind her, gave her a wound in the back part of the leg, which brought her to the ground.[2]

It is apparent from these accounts that the ancient people of La Palma had earned the right to be called " the Spartans of the Canary Islands."

[1] Galindo, op. cit., pp. 138–139.

[2] Galindo, op. cit., p. 141.

FUERTEVENTURA: CUSTOMS

Jumping and stature. Speaking of the natives of Fuerteventura, Galindo says:

> They were very nimble and took great delight in leaping and jumping, which were their principal diversions: two men took a staff or pole, which they held by the ends, and lifted as high above their heads as they could reach, keeping it parallel with the ground; and he who could leap over it, was accounted to be very dexterous. Some of them were so expert at this exercise, that they could at three jumps leap over three poles placed in that manner behind each other.
>
> The natives of these two islands were of a larger size, and better made than those of the others, and so they are to this day.[1]

This statement is well calculated to arouse the incredulity of the reader, and especially since it is followed immediately by the assertion that there exists in Lanzarote the burial place of a person named Mahan, whose grave is nineteen English feet and ten inches in length. This latter statement is certainly an exaggeration, but the Duke of Mecklenburg has published photographs and accounts of the prodigious high-jumping ability of the extraordinarily tall Watussi Negroids of Ruanda, in which it is stated that these natives have been observed to jump 2.50 meters, taking off from an ant-hill about one foot in height.[2] There may be no occasion, therefore, for discrediting Galindo's statement in regard to the leaping prowess of the Fuerteventurans, since great stature renders possible extraordinary feats of high jumping. Bontier and Le Verrier related that the followers of Bethencourt killed a giant of Fuerteventura who was nine feet in height. Espinosa says of the Guanches of Tenerife:

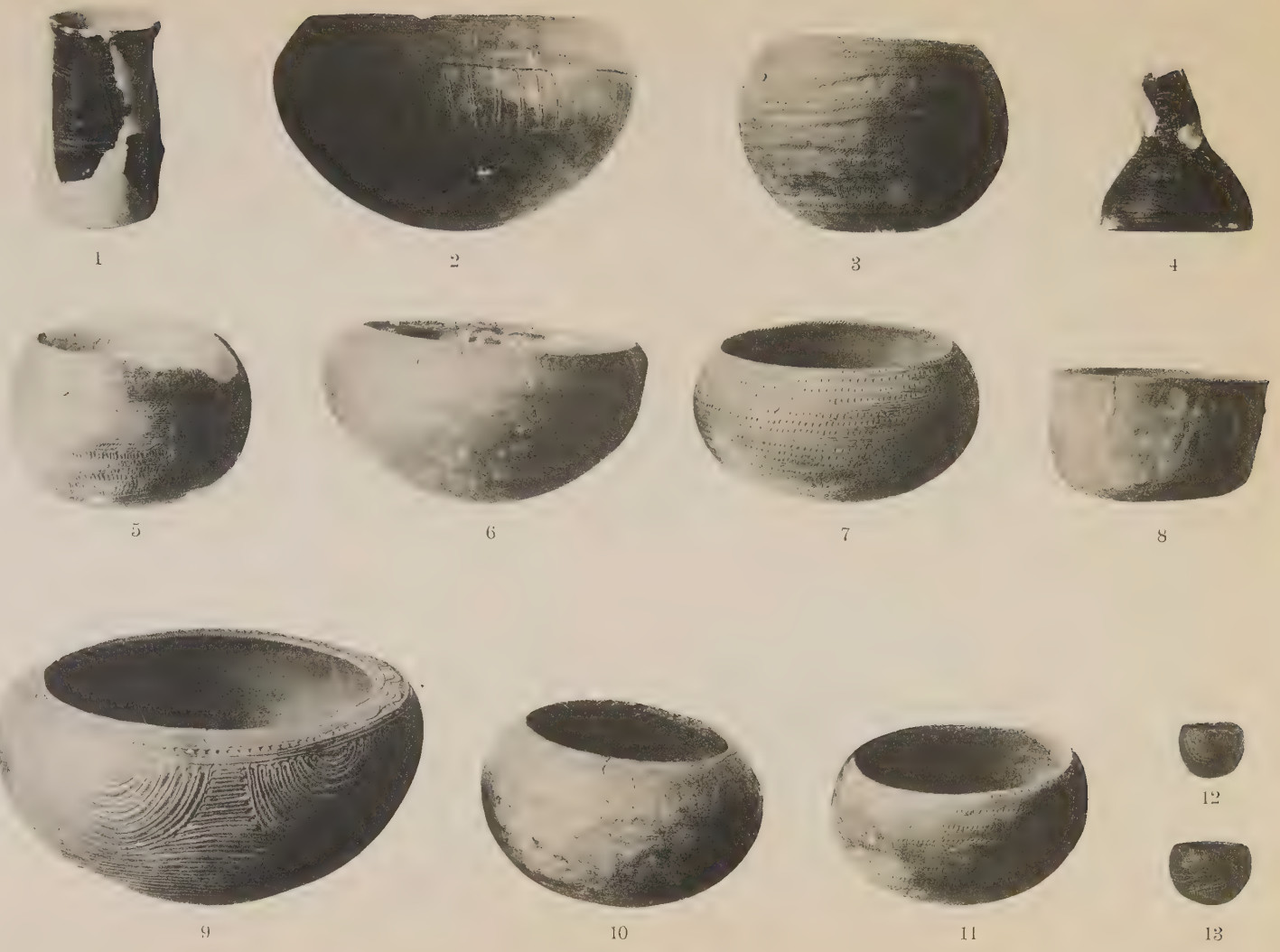
> They were of tall stature with proportionate limbs. There were giants among them of incredible size; and that it may not appear fabulous, I will not repeat what is said on the subject.
>
> Of one it is generally said, as a verified and ascertained fact, that he was 14 ft. high and had eighty teeth in his mouth.[3]

It would have been interesting had Espinosa allowed himself to record some of the "fabulous" statements about the size of the Guanches.

Judicial procedure. The following account of judicial procedure in the islands of Fuerteventura and Lanzarote is given by Galindo:

> With regard to quarrels, they had this law or custom, that if a man entered in by the door of his enemy's house, and killed him or did him harm, he was not punished; but if he came upon him unawares, by leaping over the wall, and killed him, then the Captain or Chief, before whom the cause was examined, ordered him to be put to death. The manner of executing criminals was this; they carried the delinquent to the sea-shore, and there placed his head upon a flat stone, and then with another of a round form they dashed out his brains; his children were afterwards held as infamous.[4]

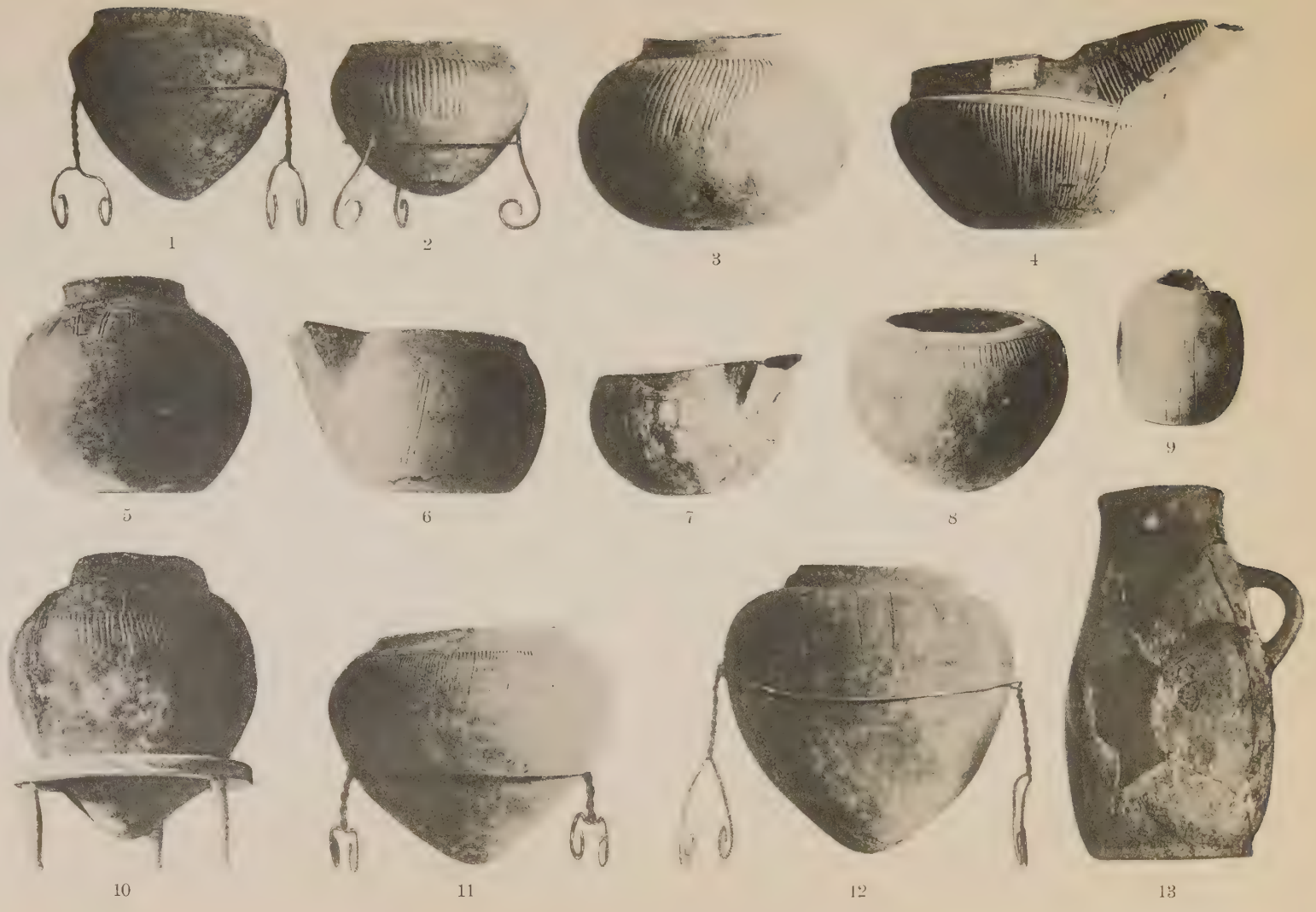
[1] Galindo, op. cit., p. 6.
[2] Adolphus Frederick, Duke of Mecklenburg, In the Heart of Africa, London, 1910, p. 59.
[3] Espinosa, op. cit., pp. 31–32.
[4] Galindo, op. cit., p. 7.



GUANCHE POTTERY FROM PALMA

(From Photographs of Lord Abercromby)

Courtesy of the Royal Anthropological Institute



GUANCHE POTTERY FROM FUERTEVENTURA

(From Photographs of Lord Abercromby)

Courtesy of the Royal Anthropological Institute

The same method of capital punishment is reported in Gran Canaria by Galindo. It will be recalled that Romulus slew Remus for jumping over the wall he had erected. A similar law must have existed among the Guanches of Tenerife, for Galindo says:

> They had a custom among them, that when one person went to the house of another, he did not attempt to enter in, but sat on a stone at the door, and either whistled or sang till some one came out and desired him to walk in. Whoever observed not this custom, but entered into another person's house without being invited, was liable to punishment, as they reckoned it a very great affront.[1]

FUERTEVENTURA: MATERIAL CULTURE

Cereals. The chaplains of Bethencourt give the following account of the inhabitants of Fuerteventura and their customs:

> The people of the country are not very numerous, but are very tall, and difficult to take alive; and so formidable are they that, if any one of them is taken by the Christians, and turns upon them, they give him no quarter, but kill him forthwith. They have villages in great number, and they live more closely together than is the custom with the inhabitants of the island of Lanzerote. They eat no salt, and live only on flesh, which they preserve without salt, hanging it up in their houses till it is quite dry, and then they eat it. . . . They have good store of tallow, which they eat with as much relish as we do bread. They are well off for cheeses, which are superlatively good, the best that are made anywhere about. They are made of the milk of goats, with which this island is more numerously stocked than any of the rest. . . . The inhabitants are of a resolute character, very firm in their religion, and they have temples in which they offer their sacrifices.[2]

The implication of this passage concerning the inhabitants of Fuerteventura is clearly that they were unacquainted with the use of barley or any other cereal. This is strange since the people of both of the neighboring islands, Lanzarote and Gran Canaria, cultivated grain. Galindo does not mention any cereal as a part of the diet of the people of Fuerteventura, but his account, as translated by Glas, deals with Lanzarote and Fuerteventura together, so that it is difficult to tell whether the customs related are common to both islands or peculiar to one, except in certain instances where he specifies the island by name. Chil gives among his list of words belonging to Fuerteventura *gofio*, which is the common Canarian word for toasted barley or other cereal, citing as authority for the occurrence of this word in Fuerteventura, Sosa, who wrote in 1678.[3] Galindo gives a word for barley — *tamosin*, which one gathers to be common to the dialects of Fuerteventura and Lanzarote. It seems probable that the Fuerteventurans were acquainted with barley, but that it was not used for food or cultivated by them to any extent. This could be explained by the extreme aridity of the island, which is almost a desert.

There is no doubt of the cultivation of barley and its use as food in Lanzarote, for the chaplains of Bethencourt state specifically: "A great quantity of barley grows there, of which they make excellent bread."[4] There are also many references to Europeans' having

[1] Galindo, op. cit., p. 153.
[2] Bontier and Le Verrier, op. cit., pp. 135–136.
[3] Jose de Sosa, Topographia de las Isla Afortunada Gran Canaria, Tenerife, 1849.
[4] Op. cit., p. 138.

obtained barley from the natives. They also say that the country was well supplied with salt, which the people of Fuerteventura lacked.

Habitations and temples. Concerning the habitations and places of worship of the people of Fuerteventura and Lanzarote, Galindo says:

> Their houses were built of stone, without cement, lime, or mortar; notwithstanding which they were strong: their entry was made so narrow that but one person could go in at a time. They had also houses of worship and devotion, which they called *Efeguen;* these were round, composed of two walls, one within the other, with a space between; and were, as well as their dwelling houses, built of loose stone, strong, and having a narrow entry. In these temples they offered to their god (for they worshipped only one) milk and butter. They sacrificed to him on the mountains, pouring out from earthen vessels, offerings of goats' milk, and adoring him at the same time by lifting their hands towards the heavens.[1]

These accounts are verified by the remains of buildings that have been studied by archaeologists. Galindo says that the island was divided into two kingdoms by a wall made of loose dry stones, four leagues in length, and crossing the breadth of the island from sea to sea. Modern investigators have found no trace of this wall.

LANZAROTE: CUSTOMS

Polyandry. Lanzarote is one of the classic places for the practice of polyandry:

> Most of them have three husbands, who wait upon them alternately by months, the husband that is to live with the wife the following month waits upon her and her other husband the whole of the month that the latter has her, and so each takes his turn.[2]

Polyandry is more common in Asia than in any of the other continents; only a few of the African peoples practise it. According to Thunberg, a Hottentot woman sometimes had two husbands.[3] Some of the South African Bantu tribes seem to have employed polyandry as an occasional form of marriage. Fraternal polyandry is practised among the poor of the Bahima or Banyankole of central Africa, according to Roscoe, and also by the Baziba, an Uganda tribe.[4]

It is important to note that Roscoe says that among the Bahima a wife may welcome to her bed any of her husband's friends or relations, and that children resulting from such intercourse belong to the husband.[5] Since we know that wife-lending was practised in Gomera, where polyandry may have existed, and that wife-lending — to the nobility at least — was a custom in Gran Canaria, where there are also suspicions of the practice of female infanticide and rumors of polyandry, it is not by any means improbable that this

[1] Galindo, op. cit., p. 7.
[2] Bontier and Le Verrier, op. cit., p. 139.
[3] Thunberg, Travels in Europe, Africa, and Asia, vol. 2, p. 193. Quoted by Westermarck, op. cit., vol. 3, p. 152.
[4] J. Roscoe, The Northern Bantu, p. 121, cited by Westermarck, op. cit., p. 153.
[5] J. Roscoe, The Bahima, Journ. Roy. Anthrop. Inst., London, 1907, vol. 37, p. 105, cited by Westermarck, op. cit., loc. cit.

form of marriage may have been common to all of the islands, in spite of statements to the contrary made by local historians. There is a very distinct tendency in Galindo and in Espinosa — a tendency even more marked in Viera and in the modern authority Chil y Naranjo — to discredit any report of social or religious customs among the ancient Canarians which they regard as discreditable or indicative of savagery.

Polyandry in Africa seems to be a Hamitic-Negroid custom, and not a Libyan practice. But the position of woman among the Touareg is such as to lead one to suspect that they may have practised polyandry at one time. Descent is generally reckoned in the female line among these desert nomads, and although a woman has but one husband she enjoys a position of dominance in the family and maintains at least platonic relationships with a number of male friends.

Method of infant feeding. Bontier and Le Verrier say of Lanzarote:

> The women have a great many children, but have no milk in their breasts; they therefore feed them with their mouths, and thus their under lips are longer than their upper ones, which is an ugly thing to see.[1]

With respect to this statement, Chil says that it is a fact that, because of the climate or of the diet of the natives of Lanzarote, the women have no milk and are forced to chew up the toasted barley called *gofio* and to give it to the infants from their mouths. He considers that the mastication of the food by the mother facilitates its digestion by the infant.[2]

Use of the ordeal. Galindo records an incident indicating that the people were accustomed to practise a form of ordeal in Lanzarote. In 1377 some Spaniards were wrecked on the island:

> Don Martin Ruiz de Avedano was lodged in the house of Qonzamas, the King, while he remained in the island. In that time he became so intimate with Fayna, the king's wife, that she had a daughter by him named Yco. Her complexion was very fair in comparison of the natives; when of age she was married to one of the royal family, who became King of the island after Guanarame and Tinguafaya were carried prisoners to Spain, in the fleet commanded by Ferdinand Peraza in the year 1385 or 1386. By this man Yco had a son named Guadarfia. After Guanarme's death, there was a great dissension in the island about the succession; the natives insisting that Guadarfia was incapable of it, because his mother Yco was not noble, being as was supposed by her colour, the daughter of a stranger, and not of Qonzamas the King. To end the dispute, the council met, and came to a resolution to shut up Yco with three female servants in the house of the deceased Qonzamas, and there to smoke them; and if she came out alive, she was to be declared noble, and the genuine offspring of Quonzamas. Before she went to the smoaky trial, an old woman advised her to convey secretly into the room a large sponge moistened in water, and when the smoak should begin to be troublesome, to put it to her mouth and nostrils, and breathe in it. Yco took her advice, which succeeded to her with; for when the door of the room that was smoaked was opened, the three servants were found stifled, and Yco alive; upon which she was brought forth with great marks of honour, and her son Guadarfia was immediately declared King of Lancerota. This is the same whom John de Betancour found reigning, on his first arrival at that island.[3]

[1] Op. cit., loc. cit. [2] Chil y Naranjo, op. cit., vol. 1, p. 407. [3] Galindo, op. cit., pp. 10–11.

This passage seems to have suffered a considerable mutilation by the translation and abridgment of Glas. Fortunately, since the writer has not had access to Galindo's work except in Glas's translation, the passage in question is quoted by Dr. Chil:

> Esta Ico casó con Guanarame, rey que fué de aquella isla por muerte de un hermano suyo, llamado Tinguanfaya que fué el que prendió la armada de Hernan Peraza. Tuvo Guanarame en Ico á Guadarfia. Muerto Guanarame hubo disensiones entre los naturales isleños diciendo, que Ico no era noble Gayre por ser hija de estranjero y no de Zonzamas.[1]

Chil states that Guanarme was the brother of Ico (Yco). If this is correct, it affords evidence that it was the custom of the kings of Lanzarote to marry their own sisters, as did the kings of Tenerife. Nobility was inherited in the male line, but the kingship descended through females.

There is, however, a chronological difficulty in accepting the identification of the son of Yco with the king who was reigning in Lanzarote in 1402, when Bethencourt arrived. For if Yco was born in 1378, she would have been only twenty-four years of age at the time of the conquest and her son could scarcely have been the king described by the chaplains of Bethencourt.

Prowess of King Guadarfia. This king of Lanzarote was an heroic figure. When Bethencourt first landed he held a conference with " the Saracen king," promised to treat him as a friend, and was allowed to build a fort. But after Bethencourt had left the island temporarily, one of his followers enticed the king and his attendants into the fort and when they were asleep, had them bound.

> When the king found himself in this position, and became aware of the treachery of Berthin and his companions and the outrage they had done to him, being a brave and powerful man, he burst his bonds, and broke away from three men who had him in their charge. One of them, who was a Gascon, pursued him; but the king turned most fiercely round upon him, and dealt him such a blow, that none of the rest dared approach him. This was the sixth time that he had delivered himself from the hands of the Christians by his own prowess.[2]

Some time later the king was again betrayed, in this instance by one of his own followers, one Asche, who intended to become king himself and afterwards to deal with the French. This Asche led a party of the French, headed by Gadifer, to a house where the king and his attendants were sleeping. After a desperate fight with the guard the king was captured.

> He (Gadifer) only retained the King and another named Alby, and having chained them round the neck, led them straight to the place where his men had been killed. When he reached this spot, where the bodies had been covered over with earth, his anger overcame him, and seizing Alby, he would have struck off his head, but the King assured him that he had not been guilty of the death of his men, and offered his own head to the axe if he should be found either guilty or conniving at the slaughter. . . . They then returned altogether to Rubicon, where the king was put into two sets of irons. After a few days he freed himself from one pair of fetters, which were too wide. When

[1] Chil, op. cit., vol. 1, p. 434.

[2] Bontier and Le Verrier, op. cit., p. 25.

Gadifer saw this, he had him put in chains, and removed the other pair of fetters which galled him badly.

A few days after Asche came to the castle of Rubicon, and it was arranged that he should be made King on condition that he and his partisans should receive baptism. When the King saw him, he looked at him with indignation, exclaiming: "*Fore troncqueuay*," which means "Wicked traitor." Asche, however, took leave of Gadifer, and invested himself with the royal robes. . . .

Now it happened that in the night of this same day [a few days later] the rightful King escaped from his prison at Rubicon, carrying with him the chains and fetters with which he was bound; and as soon as he reached his own dwelling, he seized Asche [who had betrayed him, and made himself king] and had him stoned and afterwards burned.[1]

Finally the king was again captured and, being no longer able to hold out against the superior numbers and better weapons of the Europeans, consented to become a Christian. He was baptized under the name of Luis and had to submit to a course of instruction in the faith, drawn up by the pious chaplains of Bethencourt. This introduction to the faith is set forth in seven long chapters of "The Canarian," although but one short chapter is given over to the description of the island and its inhabitants.

[1] Bontier and Le Verrier, op. cit., pp. 53–57.

CHAPTER IV

PIGMENTATION, STATURE, AND BODILY PROPORTIONS OF THE ANCIENT INHABITANTS OF THE CANARY ISLANDS

PIGMENTATION

Evidence of ancient writers and modern observers. Evidence of the pigmentation of the ancient inhabitants of the Canary Islands is furnished by the descriptions of early writers, and by the observations of the physical features of such of the present-day inhabitants as may be assumed to carry some of the aboriginal strains.

Ample testimony concerning the presence of blonds in Tenerife is available in the ancient sources. Espinosa says:

> The people to the south are of rather a brown colour, either from inheritance or from the hot climate, their skins being toasted by the sun, as they go about nearly naked. But on the north side they are white, and the women are beautiful and rosy, with long hair.[1]

A similar statement is repeated by Galindo. The poet Viana indulges in a number of descriptions of the personal appearance of various of the noble Guanches of Tenerife at the time of the conquest. Dacil, one of the daughters of Bencomo, the *mencey* of Taoro, was a blond with rosy skin and green eyes:

> Largo cabello mas que el sol dorado,
> Cejas sútiles, que del color mismo
> Parecen arcos de oro, y corresponden
> Crecidas las pestañas à sus visos,
> Los ojos bellos son como esmeraldas,
> Cercadas de cristales transparentes,
> Entreveradas de zelosos círculos
> Cual bello rosicler las dos mejillas
> Y afilada nariz proporcionada,
> Graciosa boca, cuyos gruesos labios
> Parecen hechos de coral purísimo. . . .
> . . . . . .
> Hermoso rostro de color de nieve,
> Con fuego y sangre misturado á partes.[2]

Dacil's sister, Rosalva, was also a blond. Guacimara, the daughter of the *mencey* of Anaga, is described as a gigantic woman, with red hair, black eyes, and dark, but ruddy, skin. Bencomo, himself, had a brown skin.

Modern observers such as Verneau — as well as the present writer — have noticed many country people in Tenerife with light brown hair and light eyes, and even some children

[1] Espinosa, op. cit., p. 32.

[2] Viana, op. cit., canto 3, p. 77.

with yellow hair and blue eyes. Verneau thinks that the Guanches were predominantly blonds. There is no good reason for doubting the existence of a large element of light pigmentation in this island in antiquity. Verneau is probably correct in identifying this blond stock with the people of tall stature.

There is no ancient record of the pigmentation of the people of Gomera. It is probable that they were mostly brunet, but with some admixture of blonds. Verneau observed among the modern inhabitants blond-haired individuals with short, broad faces, low orbits, badly formed noses and mouths, and small, pointed chins. These he regarded as descendants of the old population.

No early information concerning the color of skin, hair, and eyes of the people of Hierro is available. Verneau saw many blonds among the modern inhabitants. It seems probable that here also brunets were in the majority, but that blond elements were present.

The only hint we have of the complexion of the aborigines of La Palma is that one of the nobles was called *Azuquahe*, " the Brunet." Perhaps one may infer from this that dark people were rare in La Palma. Verneau says nothing of the pigmentation of the modern inhabitants.

The narrative of the Florentine who visited the Canary Islands in 1341 refers to the long, light hair of four young men who were carried away from the island of Gran Canaria. Sosa gives the following testimony: " El color trigueño, mayormente los hombres que las mujeres, las más eran muy blancas. . . ." [1] In the same passage he speaks of the majority of the men as being swarthy. Another early writer, Bartolome Cairasco de Figueroa, says that the women of Gran Canaria had dark eyes and dark hair.[2] Chil thinks that some of the women of Gran Canaria were accustomed to dye their hair red and he cites as authority for this belief a statement of Marin y Cubas: " enrubiaban los cabellos con legías." [3]

Hoyos Saínz and de Aranzadi have made observations on the eye-color of 39 modern inhabitants of the Canary Islands. These are probably based upon subjects from Gran Canaria, or from Tenerife. The following percentages are given for various shades: blue 12.8 per cent, gray-blue 2.6 per cent, gray-brown 61.5 per cent, dark brown 23.1 per cent.[4]

At any rate there is no reason to doubt that the early inhabitants of Gran Canaria consisted of both blonds and brunets, with the latter in the majority.

The inhabitants of Lanzarote and Fuerteventura were usually dark in complexion. As stated before, Yco, a queen of Lanzarote, was suspected, because of her fairness, of being the illegitimate offspring of a European father, since the other islanders were dark (Galindo).

It may be concluded then, that the inhabitants of Fuerteventura and Lanzarote were

[1] José de Sosa, op. cit., lib. 3, pp. 158–159. Cited by Chil, op. cit., vol. 1, p. 463.

[2] B. Cairasco de Figueroa, Templo Militante, Flos Sanctorum, y triumphos de suo vertudes, Lisboa, 1613–1618, p. 233.

[3] Chil, op. cit., vol. 1, p. 515, citing Marin y Cubas, bk. 2, ch. 18.

[4] L. de Hoyos Saínz and T. de Aranzadi, Vorläufige Mittheilung zur Anthropologie von Spanien, Arch. of Anthrop. Brnschwg., 1893–1894, vol. 22, p. 432.

for the most part dark; that the Gran Canarians were both dark and blond with frequent occurrence of red hair, which is often due to the crossing of pure blonds with black-haired stocks; that the blond element in Tenerife was more numerous than in Gran Canaria, and perhaps in the former island may have been numerically predominant. The mummy hair from Tenerife examined by the present writer is usually reddish brown, wavy, and of a moderately fine texture; blond hair is not in evidence, although it has often been observed by other investigators. In Gomera the blond element was present to some extent, but the brunets were apparently in the majority. It is probable that the same was true of Hierro. Finally in La Palma it is possible that the bulk of the inhabitants were of light complexion.

North African blonds in antiquity. The presence of blonds in North Africa in ancient times is thoroughly established, and has been discussed frequently and adequately. In the Egyptian paintings of the Old Empire the Libyans are regularly represented as brunets, but in the New Empire delineations xanthochroids predominate, and even persons with blue eyes and red hair are depicted.[1] There are also a few explicit classical references to blond Libyans. Callimachus speaks of the Greek colonists of Cyrene as dancing with the blond Libyan women.[2] Scylax says that the Libyans around Lake Tritonis are reported to be fair and finely built.[3] Procopius mentions blond natives in the west.[4] Lucan speaks of the blond Libyan, and black Ethiopian, serving-women of Cleopatra.[5]

Pigmentation of modern peoples of North Africa. Bertholon and Chantre state that the area which was ancient Numidia is today occupied by people prevailingly of the tall, blond, dolichocephalic type.[6] According to these authors the modern inhabitants of Tunisia, Algeria, and the oases are of a fairly uniform skin color — generally reddish brown. White skins are common in the large cities, and, among numerous inhabitants of the western part of Tunisia, the skin that is protected by garments is generally white. In the north of the province of Constantine in Algeria, from the Aures range to the sea, many of the natives display this light pigmentation. Brown, yellow, reddish brown, and very dark brown skins are usually more common in all of Eastern Barbary.

Straight, and rather coarse, black hair is predominant in Eastern Barbary. Frizzy hair is found only where there are clear traces of Negroid admixture. Light hair is much more common than light skin. Pure blond hair is relatively rare in adults, but is frequently

[1] Oric Bates, op. cit., p. 40 and note 2.

[2] Callimachus, Hymni ii, (Apolloni), 86

ἀνέρες ὠρχήσαντο μετὰ ξανθῇσι Λιβύσσης

[3] Scylax, Periplus, 110, οὗτοι γὰρ Γίζαντες Λίβυες λέγονται ξανθοί, ἄπαστοι καὶ κάλλιστοι.

[4] Procopius, De bello Vandalico, ii, 13, οὐχ ὥσπερ οἱ Μαυρούσιοι μελανόχροοι, ἀλλὰ λευκοί τε λίαν τὰ σώματα καὶ τὰς κόμας ξανθοί.

[5] Lucan, Pharsalia, x, 129 sqq.

Haec Libycos pars tam flavos gerit altera crines
Ut nullas Caesar Rheni se dicat in arvis
Tam rutilas vidisse comas; pars sanguinis usti
Torta caput, refugosque gerens a fronte capillos.

[6] Bertholon and Chantre, Recherches anthropologiques dans la Berbérie Orientale, Lyon, 1913, p. 378.

found in children. This phenomenon, the progressive pigmentation of the hair, is observable wherever recessive blonds have crossed with dominant dark-haired stocks. Red hair, which is also the result of such mixtures in the majority of cases, resists progressive pigmentation much better than does yellow hair. Some of the North African tribes have changed from blond to brunet pigmentation within historical times, as a result of intermixture with strangers. In the region of Jemmapes, the Denhaja are said to have had blond hair and blue eyes before the French occupation, when wars with the surrounding tribes forced them to practise endogamy. Today hair and eyes and skin are prevailingly dark, although the recessive weak-pigmented condition still expresses itself in children of the tribe.[1]

In the area of Eastern Algeria and Western Tunisia where blonds are most common, Bertholon and Chantre found brown or red hair in 19 to 38 per cent of various tribal groups. The most southern group of blonds is said to be the Shawia of the Aures mountains. All authorities agree that pure blonds are very common here. In the plateau of Constantine, light brown hair and blond hair are found in proportions varying, in different tribes, from 33 to 83 per cent. Blue and light eyes are usually found with the blond and light brown hair.

Blond elements in the populations of North Africa extend west of Algeria, into Morocco. There is for this area, however, no such admirable body of evidence as is available for Eastern Barbary through the researches of Bertholon and Chantre. Anthropometric data on the tribes of Morocco are very scanty, owing to the dislike of strangers by these independent Berbers, a dislike which has rendered scientific investigation impracticable throughout a large portion of the area. It is generally known, however, that the tribes of the Rifian area along the Mediterranean coast include large blond elements. Probably blonds are more numerous here than in any other region of North Africa.

In the neighbourhood of Melilla, the Marquis de Segonzac reports that he observed blonds and brunets in about equal numbers. He states that people with red hair are common, and that in general complexions are light and ruddy. Eyes are blue and gray-blue more often than dark.[2] Among the Berber groups of central Morocco and the Atlas, de Segonzac reports that the hair-color is prevailingly black or dark brown, and that blonds are rare. But the people of the Kasba d'Agourai, in the country of the Beni Mtir, are almost all blonds. The neighbouring Berbers and Arabs consider them the descendants of renegade Europeans. Blond types and albinos are also common in Fez. South of the Atlas the Berbers are much darker in pigmentation, owing to Negroid admixtures. De Segonzac describes the men of the Atlas Breber tribe of the Beni Mgild as round-headed with heavy brow-ridges; thick, well-separated eye-brows; prominent, broad noses, big mouths, and small chins. They have white skins and their hair is reddish blond.[3] The Aït

[1] Bertholon and Chantre, op. cit., pp. 155–156.

[2] Marquis de Segonzac, Voyages au Maroc, 1899–1901, Paris, 1903, p. 47.

[3] Segonzac, op. cit., pp. 136–137.

Aïch, another Atlas tribe, is described as mostly blond, with light hair, blue eyes, and light complexion.[1]

This same intrepid traveller describes the Shluh as generally round-headed, with thick lips, dark complexions, and scanty beards. Blonds were rare, but he saw a few. Among the Zenaga of Tafeza, de Segonzac counted eight blonds and two albinos among thirty Jews.[2] Among the Shluh and Zenaga of the southwestern portion of Morocco, the same traveller mentions occasional individuals of a " Kalmuck " type. This is a very significant statement, in view of the decided resemblance to Kalmuck crania manifested by the ancient brachycephalic crania of the Canary Islands.

The evidence of a large blond element in the population of North Africa long before the period of the Vandal invasion, and the persistence of blondness in the region of Africa Minor today, make it impossible to regard the lightly-pigmented inhabitants of the Canary Islands in antiquity as anything else than the westernmost extension of the same blond Libyan race represented in the Egyptian paintings of the New Empire. That this pigmentation can be due to the operation of any local environmental factors, such as light and altitude, is, in view of the general world distribution of blondness, wholly unthinkable. There can be little doubt that in prehistoric times Northwestern Africa was a center of blondness such as occurs today only in the uplands of the Scandinavian peninsula.

CALCULATION OF STATURE FROM LONG BONES

The determination of the stature of the ancient inhabitants of the Canary Islands is important because of the apparently diverse racial elements which mingled to form the populations of the several islands. Stature is probably subject to a greater environmental fluctuation than any other bodily measurement except weight. It is nevertheless a racial character and, if large groups are considered as a whole, is mainly determined by race. This paper contains no original data on the stature of the Guanches except in the island of Tenerife, and even here our material is inferior to that of some of the previous investigators. It will be necessary to rely principally on the information furnished by Verneau, whose studies for the separate islands are the most comprehensive in existence.

In Tenerife. In Table 3 are set forth the mean statures of Tenerife Guanches, calculated on the lengths of the various long bones, by the use of the tables of D'Orfila and Manouvrier, against calculations of the stature from the same data by the formulae of Pearson.[3] In the latter case I have calculated the statures by Pearson's formulae from the means of the lengths of the various long bones given by Verneau.[4]

[1] Ibid., p. 166.

[2] Segonzac, Au Coeur de l'Atlas, Paris, 1910, p. 196.

[3] K. Pearson, On the Reconstruction of the Stature of Prehistoric Races, Philos. Trans. R. S., London, 1899, s. A, vol. 192, p. 196.

[4] R. Verneau, Rapport, pp. 621–622.

At the right of the table are the statures of a series of Guanche bones from Tenerife, now in the Peabody Museum, calculated from Pearson's formulae. Verneau states that his results for stature in Tenerife are based upon measurements of almost 1000 long bones from every part of the island. The Peabody Museum series all came from a single cave near San Andres, a few miles north of Santa Cruz. I am of the opinion that this particular cave contained bodies of individuals who represent a group somewhat below the mean of the stature of the ancient population.

TABLE 3. STATURE OF TENERIFE GUANCHES.

	(After Verneau)			(Hooton)	
Males	Tables of D'Orfila cm.	Tables of Manouvrier cm.	Formulae of Pearson cm.	Formulae of Pearson cm.	Number of bones
Femur	169	167	165.54	164.10	39
Tibia	170	172	168.00	165.80	48
Fibula	170	...	...	...	..
Humerus	170	165	164.40	162.82	31
Ulna	172	...	...	...	..
Radius	170	173	166.39	164.54	17
Mean	170	169	166.08	164.54	34
Females					
Femur	152	147	152.19	151.60	24
Tibia	153	156	154.85	153.00	23
Fibula	153	...	...	...	..
Humerus	154	149	153.03	152.38	26
Ulna	154	...	...	...	..
Radius	155	156	157.78	156.94	12
Mean	153.5	152	154.46	153.48	21

Turning to the table, it is to be noticed that the mean stature of males based upon the tables of D'Orfila is 170 cm., according to Manouvrier's tables 169 cm., and by Pearson's formulae 166.08 cm. Now it is certain that Pearson's formulae yield the best results for the calculation of the statures of ancient populations. It is therefore almost certain that Verneau, who depended largely upon the tables of D'Orfila, consequently over-estimated the stature of the Guanches. Our own data for male Guanches yield, by Pearson's formulae, a mean stature of 164.5 cm., but the part of the island from which these bones were taken is the region which, according to Verneau, yields the greatest number of small statures.

On the other hand, Pearson's formulae give a somewhat higher mean value for female stature (154.5 cm.), than the tables of D'Orfila or Manouvrier. Our own data by Pearson's formulae yield a mean stature of 153.5 cm.

Verneau gives the range of male stature as 153 cm. to 186 cm. The range in our small series is 159.5 cm. to 170.7 cm. on the basis of femora, and 157.7 cm. to 176.3 cm. on the basis of tibiae. Verneau found 48.3 per cent of male statures above the mean of the series,

2.5 per cent at the mean, and 48.6 per cent below the mean. It is thus evident that the Guanche population included some tall individuals. He found no significant differences in the means of the different regions of the island, although the northern area seemed to show more short individuals than the southern and western regions.

There is no reason for supposing that the Guanches of Tenerife were, as a people, very tall. But Verneau is probably correct in stating that in this island a blending of extremes of stature had given rise to a considerable range of variation.

In Gran Canaria. For the estimation of stature of the ancient inhabitants of Gran Canaria ample data are available. Dr. Verneau based his estimates upon 393 male long bones and 265 female long bones. Unfortunately the coefficients used by him, as in the case

TABLE 4. Stature of Inhabitants of Gran Canaria. (After Karl Pearson)

Formula used	Group I (Guayadeque)		Group II Various sites	
	Males	Females	Males	Females
(*a*) Femur	166.88	153.23	166.32	152.65
(*b*) Humerus	165.56	154.37	164.70	152.99
(*c*) Tibia	168.24	156.39	168.00	155.68
(*d*) Radius	166.72	155.10	166.39	155.10
(*e*) F. and T.	167.72	154.76	167.26	154.09
(*f*) F. and T.	167.69	154.76	167.22	154.09
(*g*) H. and R.	166.33	154.92	165.64	154.08
(*h*) H. and R.	165.43	154.47	164.58	153.18
(*i*) F. and H.	166.35	153.69	165.58	152.77
(*k*) F., T., H., and R.	166.79	154.82	166.11	153.72
Mean	166.77	154.65	166.18	153.83
Sexual Ratio	1.078		1.081	

of Tenerife, yield excessive values. In the southeastern part of the island he found tall males of the " Guanche " type amounting to about one-sixth of the population of the region, and yielding, according to his calculations, a mean stature of 170 cm. At Isleta, in the north of the island, he found a mean male stature of 172 cm. The females of this region had a mean stature of 163 cm. Verneau considered stature extraordinarily variable in Gran Canaria. For the southeastern part of the island he arrived at 167 cm. as the mean stature for males, and 150 cm. for females. This is an extreme sex difference. His general conclusions are that at Aguimes, Santa Lucia, and San Bartolme there was a mixed population including men above average stature and very small women. Among them were very tall males, probably of the Guanche type.[1]

Unhappily Verneau does not give the means of measurements for the long bones of the Gran Canarians, as he does for the Guanches of Tenerife. These means would enable us to recalculate the stature of his material by the use of the far more accurate formulae of Pearson. Fortunately, however, there are two large series of long bones from Gran Canaria, one of

[1] Verneau, op. cit., pp. 646–649.

which, collected by Dr. Chil y Naranjo, forms a portion of the exhibits of the Musée Broca; the other, in the Natural History Museum, is to be credited to Verneau and other anthropologists. These collections have been used for the calculation of stature by Dr. J. Rahon, whose data have been utilized also by Pearson. Chil's series consists of 528 long bones from Guayadeque; from these bones, by the use of Manouvrier's tables, Rahon deduces a mean stature of 166 cm. for males and 155.4 cm. for females.[1] The other series comes from various sites in Gran Canaria, and consists of 385 long bones; the mean statures deduced from these are: males, 165.9 cm.; females, 154.3 cm. The means of the two series for both sexes are then practically identical. Professor Pearson has utilized the mean measurements of long bones given by Dr. Rahon, for the calculation of stature by his own improved formulae. The preceding table of statures (Table 4) is taken from Pearson's well-known memoir.[2]

These means agree very closely with those of Rahon. If we compare them with the means of stature of Verneau's and of our own Tenerife material, calculated by Pearson's formulae, the following results are obtained:

TABLE 5. Comparison of Stature in Tenerife and Gran Canaria. (Pearson's Formulae)

	Tenerife		Gran Canaria	
	Series I (Verneau) Various sites	Series II (Hooton) San Andres	Series I (Chil) Guayadeque	Series II (Verneau) Various sites
	cm.	cm.	cm.	cm.
Males	166.08	164.54	166.77	166.18
Females	154.46	153.48	154.65	153.83

In Gomera. The only available data on the stature of the ancient inhabitants of Gomera are those of Verneau. Galindo states that they were of medium stature, but Verneau found them decidedly short. Without regard to sex, the following stature groups were determined by Verneau: Above 170 cm., 7.69 per cent; 165 cm. to 170 cm., 12.31 per cent; 160 cm. to 165 cm., 12.31 per cent; below 160 cm., 67.69 per cent. The mean stature of both sexes combined was 156 cm. to 157 cm. There were a few tall individuals in this island, but the majority of the people were of statures below 155 cm. The range of stature was 146 cm. to 174 cm.[3] Verneau puts the mean stature of Tenerife Guanches of both sexes at 164.5 cm., as against 156 cm. for Gomera. The former figure is certainly too high. Probably 160.4 cm. would be nearer the actual figure. It is possible, however, that the figures for Gomera, although presumably calculated on the basis of D'Orfila's tables, may be more accurate for Gomera than for Tenerife. In any event it is certain that the ancient Gomerans were, with a few exceptions, short.

In Hierro and La Palma. Although Verneau measured 350 long bones in the island of Hierro, he failed to distinguish between the sexes; nor does he give data on the mean meas-

[1] J. Rahon, Recherches sur les ossements humains anciens et préhistoriques, Mém. Soc. d'Anthrop. de Paris, 1893, s. 2, vol. 4, pp. 446–452.

[2] Karl Pearson, op. cit., p. 210.

[3] Verneau, op. cit., pp. 624–625.

urements of bones which would enable us to calculate the stature by the use of modern formulae. One series of long bones, to the number of 126, was measured in a cave called Pozo de la Ballena, in the western portion of the island. Statures of the individuals buried in this cave ranged from 148 cm. to 179 cm., with a mean of 164 cm., according to Verneau's calculations. The other lot of bones, 220 in number, were measured in the south of the island at Tablon, where the alleged inscriptions are found. This series yielded a mean of 160 cm., with a minimum of 147 cm. and a maximum of 175 cm. Verneau found only 28.10 per cent of statures under 160 cm. at Pozo de la Ballena, but 51.33 per cent of such statures at Tablon. The only deduction from these data which can be made with any certainty is that some of the inhabitants of Hierro were short, while others were of medium stature, and still others were tall. This is not a particularly instructive conclusion.

Verneau found only 11 long bones in the island of La Palma in the ravine of San Juan Belmaco, and bones of four more subjects in other parts of the island. At Belmaco he estimates the mean stature at 165 cm. or 166 cm., with a minimum of 160 cm. and a maximum of 170 cm. In the south, at Argual, he measured the bones of four persons, all of small stature, ranging from 149 cm. to 159 cm., with a mean of 155 cm. Since no distinction between the sexes was made, these measurements are of small value.

There are no data available for calculating the statures of the inhabitants of Fuerteventura and Lanzarote.

Comparison with statures of other ancient peoples. Although there were some tall elements in the ancient populations of Tenerife and of Gran Canaria, the mean of the stature

TABLE 6. Comparative Table of Statures of Ancient Peoples, Calculated from the Long Bones

Group	Authority	Male	Female	Sex Ratio
Cro-Magnons, Grimaldi, (5)	Verneau	187.0	....	....
Old Man of Cro-Magnon	Rahon	171.6	....	....
Round Barrow British	Pearson	171.1	160.2	1.090
Anglo-Saxons	"	170.9	156.0	1.096
Bajuvars from Grave Rows	"	169.2	154.5	1.095
Naquada Egyptians	"	167.5	156.0	1.074
Neolithic Britons	"	167.3	153.6	1.089
Canarians I	"	166.77	154.65	1.078
Romano-British	"	166.7	152.2	1.090
Franks	"	166.42	152.12	1.091
Canarians II	"	166.18	153.83	1.081
Guanches of Tenerife I	Hooton	166.08	154.46	1.075
Dolmens of Algeria	Pearson	165.5	152.56	1.085
Romano-Gauls	"	164.82	152.27	1.082
Guanches of Tenerife II	Hooton	164.54	153.48	1.072
Dolmens (Caucasus)	Pearson	164.33	152.47	1.078
Neolithic Man (Mureaux)	"	163.39	152.56	1.071
Neolithic Man, France and Belgium	"	162.54	151.44	1.073

in the former island scarcely surpasses the general average of mankind. The Canarians seem to have been a little taller than the Guanches of Tenerife, and this is probably due

to the fact that the average of stature in Tenerife was lowered by intermixture with the very small sub-brachycephalic people of Gomera. Although no satisfactory data exist for stature in Gomera, it is apparent that the inhabitants of this island were short. In Hierro and La Palma it is probable that the mean stature of the ancient inhabitants was inferior to that of the Gran Canarians, but greater than that of the Gomerans. No data for Fuerteventura and Lanzarote exist, but the evidence of early writers inclines us to the opinion that these were the tallest of all the Guanches.

An inspection of Table 6, compiled largely from Pearson's data, shows the position, with respect to stature, of the Guanches of Gran Canaria and of Tenerife in comparison with other ancient populations. The Cro-Magnon men from Grimaldi yield a far higher average stature than any of the other groups recorded. It seems certain that Verneau's estimates are considerably too high. As a matter of fact these estimates were made from Manouvrier's tables and then 5 cm. were added to each because Verneau had made his primary calculations from minimum estimates of imperfect bones. Probably even 182 cm. is too high an average stature for this group of fossil men.[1] A mean stature of 187 cm. would put this fossil group outside of the range of known group stature, ancient or modern.

The Bronze Age and Anglo-Saxon British are a good deal taller than our Guanches of Tenerife and of Gran Canaria. The Neolithic British and the Naquada Egyptians also surpass slightly the tallest of our Canary Island groups. Between the Guayadeque Canarians (Canarians I) and the San Andres Tenerifians (Guanches of Tenerife II)— the maximum and minimum stature groups of our series — are the Romano-British, the Franks, the Dolmen peoples of Algeria, and the Romano-Gauls. Below all of our Canarians are the Dolmen peoples of the Caucasus and the Neolithic people of France and Belgium. The tallest peoples in the list, with the exception of the Cro-Magnons and possibly of the Naquada people, are those which carry the highest proportions of Nordic blood. The smallest are those in which such Nordic blood is probably lacking.

Comparison of statures of Canary Islanders and modern peoples. The stature of the Guanches of the Canary Islands may profitably be compared with the stature of the modern inhabitants of Northwestern Africa and of the Spanish peninsula. No satisfactory data on the peoples of Morocco are available; but for Algeria, Tunisia, and Tripoli, the great work of Bertholon and Chantre may be utilized.[2] The basis of their investigation of stature is more than 7000 measurements.

Bertholon and Chantre adopt 164 cm. as the limit below which all males are included in a small-stature grouping. The distribution of statures inferior to 164 cm. in Eastern Barbary is roughly as follows: the island of Gerba; the Tunisian Sahel as far west as the right bank of the Medjerda; Kabylia, including an area extending as far west as Milianah,

[1] R. Verneau, Les Grottes de Grimaldi, Monaco, 1906, vol. 2, pp. 57–63.

[2] L. Bertholon and E. Chantre, Recherches anthropologiques dans la Berberie orientale, Lyon, 1913, pp. 1–38.

and southward to the sub-desert ranges of the Atlas; the oases of M'zab, Touggourth, Negrine, Tripoli, Tawegha. The mean of the stature of 333 males of the island of Gerba is 163.7 cm. Most of the small-stature groups are coastal in their habitat, although some of them are found in the oases, and some in mountain ranges where the peoples are almost troglodytic in their manner of life. The peoples of small stature are usually surrounded by groups of taller stature. The central part of Eastern Barbary is largely occupied by tall peoples, with statures averaging 172 cm. or more. These peoples occupy the sub-desert plateaus between the Tunisian Sahel and Kabylia. The element of small stature seems to have been driven into the oases of the Sahara, into the extremely mountainous areas, and into the low coastal areas of Tunisia. The short peoples tend to be sedentary in Eastern Barbary, and the tall peoples are often nomadic. Bertholon and Chantre regard the populations of intermediate stature as the result, in large measure, of crosses between the tall and the short.

In the Canary Islands the elements with short stature are largely concentrated in the western islands of the group, and especially in Gomera. The tallest populations were probably in Fuerteventura and Lanzarote, which are also sub-desert in character.

The western islands, which contain the largest proportions of small inhabitants, are much more rugged and mountainous than are the eastern islands. The opinion of Verneau is that the people of medium stature in the Canary Islands, were, as in Eastern Barbary today, the result of crossings between the tall and the short stocks.

Stature in Spain is generally low. The mean of 1690 observations by Hoyos Sáinz and de Aranzadi is only 162.1 cm.[1] Provincial averages from these data range between 163.6 cm. (182 observations in Catalonia), and 160.0 cm. (182 observations in Galicia). But the larger mass of measurements of Olóriz (6072 observations), indicates that the populations of the eastern and southern coasts are taller than the people of the interior plateaus. Some of the former yield provincial averages as high as 167 cm.[2] The mean of all observations is 162 cm.

The average stature of 1444 male Portuguese, according to Sant' Anna Marques, is about 164.5 cm. Provincial averages range from 163.4 cm. (Douro) to 167.4 cm. (Beira Alta).[3]

The only data for modern Canarian stature that I have been able to discover, are the measurements of 6 individuals by Hoyos Sáinz and Aranzadi. The mean of this small group was only 161 cm. The island in which these measurements were taken is not stated. Verneau measured some bones of modern inhabitants of Lanzarote and came to the conclusion that the mean stature of males was as high as 174 cm.; but this is probably an over-

[1] Op. cit., p. 433.

[2] F. Olóriz y Aguilera, La talla humana en España, Discursos leidos en la Real academia de medicina, Madrid, 1896.

[3] A. A. Mendes Corrêa, Origins of the Portuguese, Am. Journ. Phys. Anthrop., Washington, 1919, vol. 2, p. 139, citing Sant' Anna Marques, Estudo da Anthropometria portugesa, Lisbon, 1899.

estimate.[1] The same author says that in Fuerteventura he often met men of great stature exceeding 175 cm.[2] According to this authority the inhabitants of Gomera are short and the men of Hierro are tall.

From 7061 observations of Bertholon and Chantre in Algeria, Tunisia, and Tripoli, it may be deduced that the average stature of Eastern Barbary is about 166.4 cm. The average stature of 1133 Tunisians, according to Collignon, is 166.2 cm.[3] The average stature deduced from Bertholon and Chantre's measurements of 942 women of Eastern Barbary is about 154.3 cm. We may therefore summarize results in the following table:

TABLE 7. Stature of Ancient Canary Islanders Compared with Statures of Modern Inhabitants of Eastern Barbary and the Spanish Peninsula

Group	Authority	Male	Female
Canarians I	Pearson	166.77	154.65
Eastern Barbary	Deduced from Bertholon and Chantre	166.4	154.3
Canarians II	Pearson	166.18	153.83
Guanches of Tenerife I	Hooton	166.08	154.46
Guanches of Tenerife II	Hooton	164.54	153.48
Portuguese	Sant' Anna	164.5	....
Small sub-brachycephals (Eastern Barbary)	Bertholon and Chantre	164.0	154.0
Small dolichocephals (Eastern Barbary)	Bertholon and Chantre	164.0	153.0
Spanish	Olóriz	162.0	....

In conclusion it may be stated that stature in the Canary Islands in antiquity is more closely comparable with modern stature in Eastern Barbary than with modern stature in the Spanish peninsula.

BODILY PROPORTIONS. THE TIBIO-FEMORAL AND RADIO-HUMERAL INDICES

The relation of the lower to the upper segment of the leg has sometimes been considered of racial significance. Especially tibiae long with relation to their femora, i.e. high tibio-femoral indices, have often been considered a Negroid feature. A low value of this index has been considered characteristic of the Mongoloids. It is obvious, from Table 8, that this index can have little racial significance. The ancient people of the Canary Islands, with the exception of the Gomerans and the Canarians of Isleta, present rather high values of this index. In this respect they resemble not only the ancient Cro-Magnon type, but also many other more or less primitive peoples in various parts of the world. Europeans perhaps present moderate values of this index in most cases. But the very small range of its mean value throughout the world renders the tibio-femoral index of small value for purposes of racial diagnosis. It is interesting, however, to note the approximation of the short Gomeran to the Mongoloid proportions.

[1] Verneau, Cinq Années de Séjour aux Îles Canaries, p. 159.
[2] Verneau, op. cit., p. 192.
[3] R. Collignon, Ethnographie générale de la Tunisie, Bull. de géog. hist. et descr., Paris, 1887, vol. 1, pp. 181–353.

A long forearm relative to the arm is often considered a Negroid feature. But Table 9 shows that a high value of the radio-humeral index is often found in primitive peoples, regardless of race. Ancient inhabitants of the Canary Islands show higher means of this index than modern Europeans. But this index cannot be said to have any value as a criterion of race.

TABLE 8. Means of Tibio-Femoral Index

Group	Authority	Males	Both Sexes	Females
Tenerife	Verneau	84.1	...	85.0
Tenerife	Hooton	83.3	...	81.4
Gran Canaria				
Isleta	Verneau	...	80.8	...
Guayadeque	"	...	82.7	...
Guayadeque	Rahon	83.4	...	84.6
Gran Canaria	"	83.7	...	84.5
Gomera	Verneau	...	78.6	...
Hierro				
Pozo de la Ballena	"	...	84.05	...
Tablon	"	...	83.6	...
Cro-Magnons of Grimaldi	"	83.5	...	...
Ancient Egyptians	Martin	82.4	...	...
Negroes	Topinard	82.9	...	84.4
Berbers	Martin	83.0	...	...
Negroes	Bello	84.1	...	85.6
Bushmen	Martin	84.1	...	...
Masai	"	85.3	...	85.0
Lapps	"	77.3	...	...
Alamanni of Switzerland	"	80.6	...	81.7
Merovingians	"	80.8	...	81.5
French	"	81.1	...	80.8
French	Bello	82.7	...	81.7
Negritoes	Martin	84.3	...	...
Malays	"	84.9	...	...
Polynesians	"	83.3	...	...
Melanesians	"	85.6	...	...
Peruvians	"	84.7	...	85.1
Eskimo	"	78.9	...	...

TABLE 9. MEANS OF RADIO-HUMERAL INDEX

Group	Authority	Males	Both Sexes	Females
Tenerife	Verneau	75.9	77.0	77.3
North	"	77.5	76.7	76.9
West	"	75.9	78.8	81.9
North	Hooton	78.2	...	77.6
Gran Canaria	Verneau			
Isleta	"	...	72.7	...
Guayadeque	"	...	76.6	...
Guayadeque	Rahon	75.3	...	73.0
Gran Canaria	"	75.7	...	74.6
Gomera	Verneau	...	76.8	...
Hierro	"			
Pozo de la Ballena	"	...	76.8	...
Tablon	"	...	76.6	...
Cro-Magnons of Grimaldi	"	75.2	...	...
Egyptians	Martin	78.8	...	78.1
Negroes	Topinard	79.0	...	78.3
Bushmen	Martin	78.3	...	...
Masai	"	79.5	...	76.4
Alamanni of Switzerland	"	74.7	...	74.8
Parisians	"	71.3	...	74.3
Tiroleans	"	74.5	...	76.5
Chinese	"	75.4	...	73.4
Aino	"	77.6	...	77.0
Negritoes	"	78.3	...	78.2
Maori	"	77.8	...	...
Eskimo	"	79.4	...	71.4
Fuegians	"	80.6	...	76.3
Lower Californians	"	81.5	...	76.2

CHAPTER V

CRANIAL MEASUREMENTS AND INDICES

MATERIAL

The skeletal material upon which this study is based consists, almost entirely, of calvaria without lower jaws, in the collection of the Municipal Museum of Santa Cruz de Tenerife. The mandibles of most of the calvaria are also in the museum collections but dissociated from their calvaria. Time for the fitting of mandibles to calvaria was lacking.

Almost all of the crania were accompanied by ample data, in the museum catalogue, with respect to their provenience. From the cranial collections of the museum were selected for measurement and study all adult or sub-adult specimens in a good or fair state of preservation.

The determination of sex was carried out by the anatomical method, and whenever there was any doubt as to the sex of a skull, the specimen was relegated to a special class — "Sex Doubtful." The number of males examined far exceeds the number of

TABLE 10. Number and Sex of Crania Studied

(Collection of the Municipal Museum of Santa Cruz de Tenerife)

	Males	Females	Doubtful	Total
Tenerife	252	81	18	351
Gomera	34	12	4	50
Gran Canaria	20	6	1	27
Hierro	13	7	0	20
Fuerteventura	2	0	0	2
La Palma	1	0	0	1
Total	322	106	23	451
Per cent	71.39	23.50	5.10	

females. This is partially due to the fact that male crania are more robust than female crania, and stand a much better chance of preservation. Calvariae (with the faces broken away) were excluded from our series.

There is no doubt that, whatever may be the experience of the observer, and however careful he may be in his sex determination, incorrect assignments of sex occasionally occur. In the case of primitive people it is probable that large and muscular females are sometimes judged to be males. The present writer cherishes no illusions as to his own infallibility in the matter of sex determination from calvaria only, but the well-defined sex characters in the bulk of this series and the practice of assigning doubtful crania to a special class lead him to believe that his errors in sexing have been sufficiently few in number as not to

affect perceptibly the craniometric and morphological integrity of his sex series. No effort has been made to analyze the group characteristics of the crania of doubtful sex.

The illustrations of crania which accompany this study are, for the most part, Tenerife crania in the Peabody Museum, collected by the present writer in the expedition of 1915. The metrical and morphological study of this small group of crania is not included in the present work, because of the insignificance of the numbers, in comparison with the splendid series from the Municipal Museum. It is felt, however, that the small Peabody Museum collection of crania is fairly representative of the types encountered in the islands, with the exception of the dolichocephalic type.

For comparative purposes the series of Canary Islands crania studied by Verneau,[1] and those studied by Chil,[2] have been utilized, and also the Tenerife series studied by Shrubsall[3] and Von Behr.[4]

THE CRANIAL VAULT

TABLE 11. Glabello-occipital Length

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	247	173–200	185.85±0.23	5.35±0.16	2.88±0.10
Gomera	34	170–193	181.53±0.72	6.25±0.51	3.44±0.28
Gran Canaria	20	174–200	186.25±1.05	6.96±0.74	3.74±0.40
Hierro	13	174–190	180.54±1.19	4.36±0.58	2.41±0.32
Females:					
Tenerife	81	164–192	176.43±0.36	4.86±0.26	2.75±0.14
Gomera	12	168–178	173.67 ..	....	....
Gran Canaria	6	169–181	176.66 ..	....	....
Hierro	7	176–185	179.00 ..	....	....

The mean glabello-occipital length for Tenerife males is almost 186 mm. Verneau gives 190 mm. as the mean length of his Guanche males, about 50 in number. Von Behr's male series of about 83 yields a mean length of 184 mm. (range 174–200), and Shrubsall's 54 male crania have a mean length of 181 mm. The series measured by the present writer is considerably larger than the combined series of the other investigators and probably represents a closer approximation to the average figure for the ancient Guanches, falling between the extremes of Shrubsall's short-headed series, and the very long-headed series of Verneau.

The Gomera males are considerably shorter in head-length than those from Tenerife. The former average only 181.5 mm. Verneau's average glabello-occipital length for the males of this island is 184 mm. with a range of 173–195. His series is probably not as long as mine. The mean of 33 crania measured by Chil is 180.45.

The short series of male crania from Gran Canaria, 20 in number, has a mean glabello-occipital length of 186.25, which is substantially the same as that of the Tenerife series.

[1] Verneau, Rapport. [2] Chil, op. cit., vol. II, plates I–XVIII.
[3] F. C. Shrubsall, Crania from Teneriffe, Proc. Cambridge Philos. Soc., vol. ix, part III, pp. 154–178, 1896.
[4] Detloff v. Behr, Metrische Studien an 152 Guanchenschädeln, Stuttgart, 1908.

Unfortunately Verneau does not give the mean length for his entire male series of 101 crania, but the means of various groups from different parts of the island range between 188 mm. and 191 mm. Thirty-three male skulls from Gran Canaria, measured by Chil, yield an average glabello-occipital length of 184.6 mm.

The mean glabello-occipital length of 13 male crania from Hierro is 180.5 mm. Three groups of male crania from Hierro, measured by Verneau, yield means of 185 mm., 184 mm., and 186 mm. Eight skulls measured by Chil average 181.4 mm.

From the island of La Palma, Verneau was able to obtain only 9 crania. He gives a mean glabello-occipital length of 186 mm. for males and 182 mm. for females. The one male cranium from La Palma measured by the present writer has a glabello-occipital length of 198 mm.

Two male crania from Fuerteventura, measured by the present writer, have lengths of 190 mm. and 197 mm. respectively. These seem to be the only crania from this island which have been measured, or, at any rate, of which measurements have been published.

The mean glabello-occipital length of 81 female crania in our series is 176.4 mm. Verneau's series of female crania from Tenerife also average 176 mm. in this measurement. Shrubsall, with 39 female skulls, and Von Behr, with 44 female crania, both give 178 mm. as the mean glabello-occipital length.

The 12 female crania from Gomera in our series have a mean glabello-occipital length of 173.6 mm. Verneau's series average 173 mm.; Chil's series of 21 crania has a mean glabello-occipital length of 173.9 mm.

The mean length of 6 female crania from Gran Canaria is 176.6 mm., while regional means of Verneau's 64 female crania vary from 180 mm. to 182 mm. Chil's series of 18 crania has an average length of 177.3 mm.

Seven female crania from Hierro yield an average length of 179 mm. Three groups measured by Verneau, comprising 33 crania, give means of 176 mm., 179 mm., and 183 mm. Eleven crania measured by Chil average 179.2 mm.

TABLE 12. Glabello-occipital Length. (Comparative)

	Hooton		Verneau		Chil		Von Behr		Shrubsall	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Males:										
Tenerife	247	185.8	?	190	29	185.8	83	184	54	181
Gomera	34	181.5	?	184	29	180.9	..	...	..	...
Gran Canaria	20	186.2	101	188–191	32	184.7	..	...	..	...
Hierro	13	180.5	46	184–186	8	181.4	..	...	..	...
Females:										
Tenerife	81	176.4	?	176	20	179.3	44	178	39	178
Gomera	12	173.7	?	173	21	173.9	..	...	..	...
Gran Canaria	6	176.7	64	180–182	18	177.3	..	...	..	...
Hierro	7	179.0	33	176–183	11	179.2	..	...	..	...

From a perusal of the table above, it will be seen that considerable discrepancies exist between the various mean glabello-occipital lengths found by different investigators of the

crania of the several islands. These discrepancies are undoubtedly due partially to the insufficient size of the series measured, and partly to the fact that the population of the Canaries in ancient times was mixed, consisting of some tall, big-headed individuals and of other short, small-headed individuals. This will become more apparent in the comparative treatment of further measurements.

Attention should be directed to the fact that the distribution curve of glabello-occipital length for our Tenerife males shows a mode between 185 mm. and 186 mm., with minor peaks at 188 mm. and 181 mm. The distribution curve of the female series shows two modes, one at 175 mm. and the other at 180 mm.–181 mm.

TABLE 13. Maximum Breadth

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	249	130–155	142.11 ±0.21	4.95 ±0.15	3.48 ±0.10
Gomera	34	132–152	140.88 ±0.57	4.90 ±0.40	3.47 ±0.28
Gran Canaria	20	127–150	141.00 ±0.87	5.76 ±0.61	4.08 ±0.44
Hierro	13	130–147	137.69 ±0.83	4.46 ±0.59	3.23 ±0.43
Females:					
Tenerife	81	129–146	137.59 ±0.25	3.33 ±0.18	2.42 ±0.13
Gomera	11	132–142	138.27 ..	....	....
Gran Canaria	6	129–139	134.00 ..	....	....
Hierro	7	131–136	133.71 ..	....	....

TABLE 14. Maximum Breadth (Comparative)

	Hooton		Verneau		Chil		Von Behr		Shrubsall	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Males:										
Tenerife	249	142.1	?	144	28	145.3	83	141	54	139
Gomera	34	140.9	?	145	29	139.9	..	...	..	...
Gran Canaria	20	141.0	101	138–149	32	139.1	..	...	..	...
Hierro	13	137.7	46	140–144	8	136.9	..	...	..	...
Females:										
Tenerife	81	137.6	?	138	19	139.3	44	139	39	139
Gomera	11	138.3	?	141	21	134.3	..	...	..	...
Gran Canaria	6	134.0	64	134–143	18	134.7	..	...	..	...
Hierro	7	133.7	33	135–139	11	131.4	..	...	..	...

From Table 13 it may be observed that the female crania from Tenerife are less variable in regard to maximum breadth than are the males. Both males and females from the island of Hierro seem to show somewhat narrower head-breadths than are found in the crania of the other islands. It is unfortunate that Verneau fails to give means for the entire islands of Gran Canaria and Hierro, but contents himself with giving means for various local groups in the islands, the numbers of which are not stated. It is again evident from the comparative Table 14 that very different results are obtainable from the measurement of short series of crania in this archipelago.

Verneau gives 138 mm. and 139 mm. as the means for males and females of La Palma, but the series comprises only 8 crania. Our one male cranium from La Palma had a

breadth of 140 mm. Our 2 Fuerteventura males had maximum breadths of 144 mm. and 142 mm.

TABLE 15. Basion-Bregma Height

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	241	119–149	131.89±0.21	4.90±0.15	3.71±0.12
Gomera	33	121–143	131.93±0.60	5.08±0.42	3.85±0.32
Gran Canaria	20	124–148	134.25±0.95	6.30±0.67	4.69±0.50
Hierro	12	121–136	128.50±0.82	4.21±0.58	3.28±0.45
Females:					
Tenerife	79	115–138	124.84±0.31	4.05±0.22	3.25±0.17
Gomera	10	121–136	127.50 ..	....	....
Gran Canaria	6	124–136	130.50 ..	....	....
Hierro	7	120–132	125.57 ..	....	....

TABLE 16. Basion-Bregma Height. (Comparative)

	Hooton		Verneau		Chil	
	Number	Mean	Number	Mean	Number	Mean
Males:						
Tenerife	241	131.9	?	134	29	132.6
Gomera	33	131.9	?	132	26	132.6
Gran Canaria	20	134.2	101	130–146	32	136.2
Hierro	12	128.5	46	131–134	7	129.0
Females:						
Tenerife	79	124.8	?	127	15	127.0
Gomera	10	127.5	?	125	19	124.6
Gran Canaria	6	130.5	64	126–140	18	126.9
Hierro	7	125.6	33	127–130	11	125.5

In the males from Tenerife and Gomera the basion-bregma height is substantially the same, about 132 mm. Von Behr and Shrubsall have not calculated the means of this measurement. The small Tenerife series of Verneau yielded a somewhat higher mean, 134 mm. The series of Verneau and Chil, as well as my own, indicate a greater basion-bregma height for Gran Canaria males (134.2 in our series). The Hierro male crania seem to be consistently lower than those of the other islands.

According to our series, the females of Tenerife have a lower mean basion-bregma height than those of any other island. But the female series from the other islands are insufficient.

TABLE 17. Maximum Circumference. (Above brow-ridges)

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	245	463–560	522.13±0.65	15.19±0.46	2.91±0.09
Gomera	34	476–548	512.12±1.70	14.73±1.20	2.88±0.24
Gran Canaria	20	490–559	518.85±2.59	17.21±1.83	3.32±0.35
Hierro	13	484–526	505.85±2.18	11.64±1.54	2.30±0.30
Females:					
Tenerife	81	460–526	498.51±0.96	12.77±0.67	2.56±0.14
Gomera	12	480–503	493.83 ...	....	....
Gran Canaria	6	483–505	497.50 ...	....	....
Hierro	7	492–520	503.14 ...	....	....

TABLE 18. Maximum Circumference. (Comparative)

	Hooton		Verneau		Chil		Von Behr	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Males:								
Tenerife	245	522	?	534	28	529	83	523
Gomera	34	512	?	527	29	516	..	...
Gran Canaria	20	519	101	514–537	32	522	..	...
Hierro	13	506	46	519–521	8	516	..	...
Females:								
Tenerife	81	498	?	506	18	510	44	501
Gomera	12	494	?	495	20	498	..	...
Gran Canaria	6	497	64	498–528	18	504	..	...
Hierro	7	503	33	501–514	12	508	..	...

The horizontal circumference in our series of males attains its maximum in the Tenerife crania, with a mean of 522 mm. This agrees closely with the mean of Von Behr, calculated by Martin at 523 mm. Verneau's small series of large crania yields the high mean of 534. Taking into consideration the probable errors of the means, the mean for males from Gran Canaria (519 mm.) is not significantly different from that of Tenerife. The means of horizontal circumference for males from Gomera and from Hierro are significantly smaller in our series, and this result is in general substantiated by the other investigators.

TABLE 19. Nasion-opisthion Arc

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	231	340–423	368.89 ±0.54	12.21 ±0.38	3.31 ±0.10
Gomera	33	334–390	361.79 ±1.68	14.29 ±1.19	3.95 ±0.33
Gran Canaria	19	351–395	373.05 ±1.97	12.71 ±1.39	3.41 ±0.37
Hierro	12	341–372	360.17 ±1.92	9.88 ±1.36	2.74 ±0.38
Females:					
Tenerife	76	288–372	352.84 ±0.96	12.46 ±0.68	3.53 ±0.19
Gomera	12	330–370	352.67 ...	....	...
Gran Canaria	6	351–365	356.67 ...	....	...
Hierro	7	350–368	359.14 ...	....	...

TABLE 20. Nasion-opisthion Arc. (Comparative)

	Hooton		Verneau [1]		Chil		Von Behr	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Males:								
Tenerife	231	369	?	378	27	372	83	375
Gomera	33	362	?	365	26	364	..	...
Gran Canaria	19	373	101	357–376	32	373	..	...
Hierro	12	360	46	367–376	7	360	..	...
Females:								
Tenerife	76	353	?	354	17	361	44	355
Gomera	12	353	?	341	18	351	..	...
Gran Canaria	6	357	64	363–379	18	361	..	...
Hierro	7	359	33	363–376	11	360	..	...

[1] The means of the nasion-opisthion arc of Verneau's series have been calculated in this table by taking the sum of the means of frontal arc, parietal arc, and occipital arc, and are therefore only approximately comparable with the means of the entire sagittal arcs given in the case of the other investigators.

The females in our series are considerably smaller than the males. Again there is no significant difference between the females of Gran Canaria and of Tenerife. The females of Hierro seem somewhat larger in respect to horizontal circumference than those from the other islands, but the series is insufficient.

A perusal of the preceding tables shows differences between the means of the sagittal arc for the males of different islands of the Canary group substantially similar to those found in previous tables. The skulls from Hierro and Gomera are smaller than those from Tenerife and Gran Canaria. These differences are not so consistent in the case of the females.

The crania from Canaria seem to have somewhat larger nasion-opisthion arcs than those from Tenerife.

TABLE 21. Transverse Arc

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	242	284–346	304.05±0.41	9.43±0.29	3.10±0.10
Gomera	34	288–322	302.44±1.10	9.45±0.77	3.12±0.26
Gran Canaria	20	281–328	306.25±1.66	10.98±1.17	3.58±0.38
Hierro	13	282–317	295.08±1.69	9.06±1.20	3.07±0.40
Females:					
Tenerife	80	272–313	290.98±0.66	8.81±0.47	3.03±0.16
Gomera	11	283–305	293.91 ...	....	...
Gran Canaria	6	287–306	297.42 ...	....	...
Hierro	7	281–292	287.29 ...	....	...

TABLE 22. Transverse Arc. (Comparative)

	Hooton		Verneau		Von Behr	
	No.	Mean	No.	Mean	No.	Mean
Males:						
Tenerife	242	304	?	307	78	301
Gomera	34	302	?	302	..	...
Gran Canaria	20	306	101	304–320	..	...
Hierro	13	295	46	292–297	..	...
Females:						
Tenerife	80	291	?	291	44	289.5
Gomera	11	294	?	291	..	...
Gran Canaria	6	297	64	294–311	..	...
Hierro	7	287	33	285–297	..	...

In the above tables the means of the transverse arc (over bregma) for males from the islands of Tenerife and Gran Canaria show no significant difference, if the probable errors are taken into consideration. The mean value of this measurement for Gomera males is slightly smaller and that of Hierro males considerably smaller. These results are, in general, confirmed by the comparative table. The mean of Von Behr's series is given incorrectly in Martin's table of transverse arcs, as 317 mm. This is probably the mean for the vertical transverse arc. The measurements of Chil are evidently incomparable with those of other writers and have been omitted.

In the case of the females, the series from Gran Canaria show the largest mean value, and those from Hierro the smallest.

TABLE 23. Minimum Frontal Diameter

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	252	77–106	96.10±0.21	4.92±0.15	5.12±0.15
Gomera	34	87–106	96.32±0.50	4.36±0.36	4.52±0.37
Gran Canaria	20	87–113	98.55±0.85	5.65±0.60	5.65±0.60
Hierro	13	89–104	96.46±0.79	4.23±0.56	4.39±0.58
Females:					
Tenerife	81	81–101	91.80±0.30	4.06±0.21	4.42±0.23
Gomera	12	89–96	93.25 ...	....	....
Gran Canaria	6	88–99	95.00 ...	....	....
Hierro	7	90–97	93.43 ...	....	....

TABLE 24. Minimum Frontal Diameter. (Comparative)

	Hooton		Verneau		Chil		Von Behr	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Males:								
Tenerife	252	96	?	98	32	98	84	97
Gomera	34	96	?	100	29	98	..	..
Gran Canaria	20	98.5	101	97–102	32	98	..	..
Hierro	13	96	46	98	8	96	..	..
Females:								
Tenerife	81	92	?	92	18	94	34	92
Gomera	12	93	?	97	21	94	..	..
Gran Canaria	6	95	64	96–98	18	96	..	..
Hierro	7	93	33	95–98	11	95	..	..

The minimum frontal diameter is largest in Gran Canaria crania of both sexes, and smallest in Tenerife. The results of the other investigators are in general the same as those yielded by our series. Verneau, as in all previous instances, finds somewhat larger means for his males than those of the present series. The mean minimum frontal diameters of Canary Islanders are moderately large.

TABLE 25. Cranial Module

	Number	Range	Mean	S. D.	V.
Males					
Tenerife	237	142–165	152.94±0.18	4.13±0.13	2.70±0.08
Gomera	33	145–158	151.18±0.46	3.90±0.32	2.57±0.21
Gran Canaria	20	143–164	153.45±0.81	5.38±0.57	3.50±0.37
Hierro	12	143–155	148.92±0.70	3.57±0.47	2.39±0.33
Females:					
Tenerife	79	140–153	145.91±0.23	3.01±0.16	2.06±0.11
Gomera	13	142–152	146.46 ...	....	....
Gran Canaria	6	144–150	147.16 ...	....	....
Hierro	6	143–149	146.33 ...	....	....

The cranial module is the mean of the three cranial diameters. It affords a useful criterion of size. It is apparent from the tables above that the cranial modules of males of

TABLE 26. Cranial Module. (Comparative) [1]

	Hooton		Verneau		Chil	
	No.	Mean	No.	Mean	No.	Mean
Males:						
Tenerife	237	153.3	?	153.3	28	154.5
Gomera	33	151.4	?	153.6	26	151.1
Gran Canaria	20	153.8	..	....	32	153.3
Hierro	12	148.9	..	....	7	149.1
Females:						
Tenerife	79	146.3	?	147.0	20	148.6
Gomera	13	146.3	?	146.3	21	144.2
Gran Canaria	6	147.0	..	....	18	146.3
Hierro	6	146.1	..	....	11	145.3

[1] In Table 26 the cranial module has been calculated from the means of the three cranial diameters, while in Table 25 the mean cranial modules are given.

Tenerife and Gran Canaria are about equal and that of Gomera is somewhat less, while the mean cranial module of Hierro is still smaller. In the case of the females no consistent differences between the crania of the various islands are observable.

TABLE 27. Length-Breadth Index. (Cranial Index)

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	245	70–84	75.99±0.10	2.30±0.07	3.03±0.09
Gomera	34	71–85	77.66±0.36	3.15±0.26	4.08±0.33
Gran Canaria	20	70–81	75.25±0.39	2.62±0.28	3.48±0.37
Hierro	13	71–79	75.85±0.42	2.25±0.30	2.96±0.39
Females:					
Tenerife	81	73–84	77.57±0.18	2.42±0.13	3.12±0.16
Gomera	11	76–82	79.00 ...	....	....
Gran Canaria	6	71–79	75.50 ...	....	....
Hierro	7	72–77	74.43 ...	....	....

TABLE 28. Length-Breadth Index. (Comparative)

	Hooton		Verneau		Chil		Von Behr		Shrubsall	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Males:										
Tenerife	245	76.0	?	76.1	28	80.0	84	77.3	54	76.8
Gomera	34	77.7	?	78.8	29	77.3	..	...	..	...
Gran Canaria	20	75.2	101	74–77	29	75.7	..	...	..	...
Hierro	13	75.8	46	75–78	8	73.8	..	...	..	...
Females:										
Tenerife	81	77.6	?	78.6	19	77.7	44	78.9	39	78.1
Gomera	11	79.0	?	80.9	21	77.3	..	...	..	...
Gran Canaria	6	75.5	66	73–79	18	75.9	..	...	..	...
Hierro	7	74.4	33	76–77	11	72.6	..	...	..	...

The combined mean cranial index of 344 male, female, and doubtful crania from Tenerife in our series is 76.83; 17 doubtful crania yielded a mean index of 77.14. Shrubsall found a combined cranial index of 77.3, and Chil one of about 78. The mean of male series is between 76 and 77.3 according to all authors except Chil, whose measurements are not all

trustworthy. It is obvious that a mean index in a population so mixed as were the ancient peoples of the Canary Islands means little unless the series from each island is very large.

It appears from a perusal of the table preceding that the mean cranial index is highest in Gomera, next in Tenerife, and lowest in Gran Canaria and Hierro.

In La Palma 4 male crania, measured by Verneau, yielded a mean cranial index of 74.19, while a fifth had an index of 75.79. Four female crania yielded an index of 76.37. The one male cranium from La Palma, measured by the present writer, had a cranial index of 70.71.

Two male crania from Fuerteventura, measured by the present writer, had indices of 75.79 and 72.08 respectively.

TABLE 29. Divisions of the Cranial Index. (Comparative)

	Dolichocephalic (x–74.9)		Mesocephalic (75–79.9)		Brachycephalic (80–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males:						
Tenerife						
Hooton	63	25.7	165	67.3	17	6.9
Verneau	?	37.0	?	59.6	?	3.4
Shrubsall	?	18.0	?	76.5	?	5.5
Von Behr	4	4.8	65	78.3	14	16.8
Chil	0	0	25	89.2	3	10.7
Gomera						
Hooton	6	17.6	21	61.8	7	20.6
Verneau	?	15.4	?	46.2	?	38.5
Chil	8	27.6	14	48.3	7	24.1
Gran Canaria						
Hooton	9	45.0	9	45.0	2	10.0
Verneau	?	25–37.5	?	37.5–75	?	5.9–12.5
Chil	7	24.1	20	69.0	2	6.9
Hierro						
Hooton	2	15.4	11	84.6	0	0
Verneau	19	47.7	27	52.2	0	0
Chil	3	37.5	4	50.0	1	12.5
Females:						
Tenerife						
Hooton	5	6.1	61	75.3	15	18.5
Verneau	?	16.7	?	58.3	?	25.0
Shrubsall	?	10.3	?	65.5	?	24.1
Von Behr	4	6.6	37	61.6	19	31.6
Gomera						
Hooton	0	0	7	63.6	4	36.4
Verneau	?	0	?	25.0	?	75.0
Chil	4	19.0	11	52.4	6	28.5
Gran Canaria						
Hooton	1	16.7	5	83.3	0	0
Verneau	?	0–75	?	25–100	?	0.3
Chil	7	38.8	7	38.8	4	22.2
Hierro						
Hooton	5	71.43	2	28.6	0	0
Verneau	6	19.3	22	70.9	3	9.7
Chil	6	54.5	5	45.4	0	0

Table 29 shows the grouping of crania according to the divisions of the cranial index. This table exemplifies strikingly the unreliability of short series as a basis of judging the proportions of various elements in mixed populations. The only really adequate series in the list are the Tenerife series of the present writer, and the Gran Canaria and Hierro series of Verneau. In the case of Tenerife male crania, the series of Verneau seems to contain a disproportionately large number of dolichocephals, while that of Von Behr shows an unduly small number of dolichocephals and an excess of brachycephals. The large series of the present writer, with about 26 per cent of dolichocephals and about 7 per cent of brachycephals, probably gives a fair approximation to the correct proportions.

Both male and female crania from Gomera show much larger proportions of brachycephals than are found in any other island. The Gomera series measured by Chil contains more dolichocephals and fewer mesocephals than the series of Verneau and of the present writer. Again, Verneau's series from this island shows an excessive number of brachycephals. It seems probable that the short series of the present writer, with about 18 per cent of dolichocephals and about 21 per cent of brachycephals, is representative for the males of this island.

Gran Canaria probably contained a population with more dolichocephals and fewer mesocephals than that of Tenerife. It is unfortunately impossible from the data of Verneau to abstract the seriations of his 101 male crania. He states, however, that the great majority of his crania from Gran Canaria are dolichocephalic or sub-dolichocephalic. In two regions only he found some few sub-brachycephalic crania. It appears probable that the male population of this island was composed of at least one third dolichocephals, with not more than 7 per cent of brachycephals.

The island of Hierro shows but one brachycephalic male cranium out of a total of 67 measured by three investigators. The distribution of all male crania is 35.8 per cent dolichocephalic, 62.6 per cent mesocephalic, 1.5 per cent brachycephalic.

In the female series from the various islands the proportions of dolichocephals are very much smaller, and of brachycephals very much larger, than in the series of males from the same islands. Females are usually somewhat more round-headed than males, but the excess of brachycephalic females in Tenerife and Gomera is larger than is to be expected from this cause. Gomera was certainly the centre of distribution of brachycephals in the Canary Archipelago, and there is some indication of a prepotence of this head-form in the females of that island and of Tenerife. This subject will be discussed in detail in a later phase of this investigation.

An examination of the frequency polygon of cranial indices for Tenerife shows a fairly symmetrical distribution for males and a decidedly bimodal distribution for females, with one peak at 76 and the other at 79. The percentage of brachycephals among the females ranges from 18.5 in our series to 31.6 in the respectably large series of Von Behr. As in the case of the males, the females of Von Behr show an excessive proportion of brachycephals

as compared with our series, while that of Verneau again shows a disproportionate number of dolichocephals. Our series, which is larger than that of the other investigators, contains 6.1 per cent of dolichocephals, 75.3 per cent of mesocephals, and 18.5 per cent of brachycephals.

In the case of the Gomera females neither the inadequate series measured by the present writer, nor the probably longer series of Verneau, contained any dolichocephalic crania.

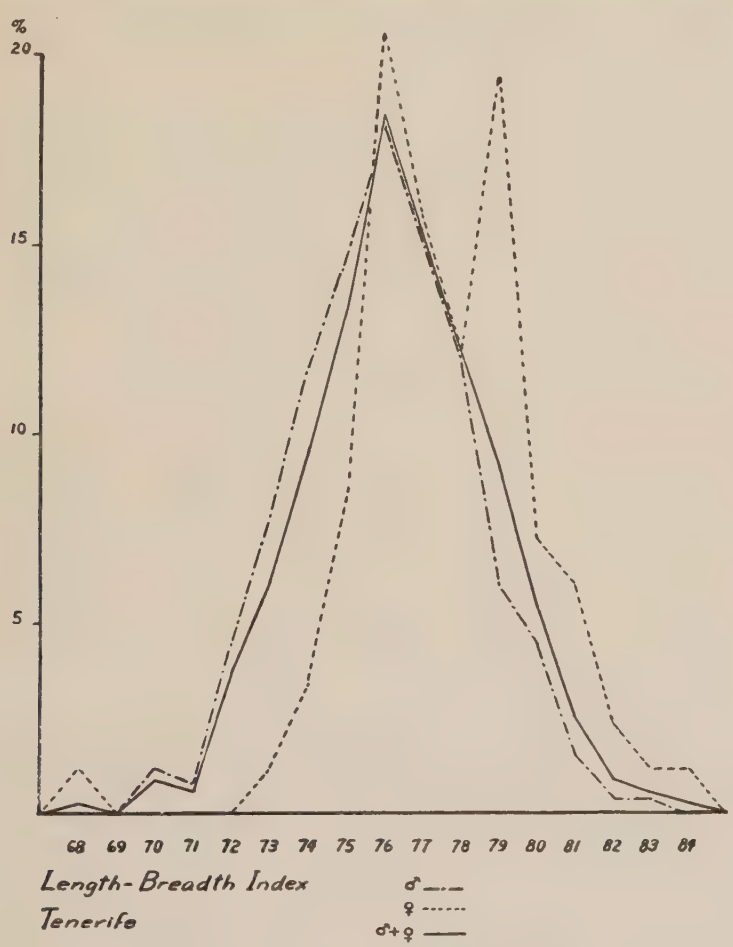


Fig. 3

But Chil's series of 21 crania included 4 dolichocephals, or 19 per cent. Verneau found 75 per cent of brachycephalic females in Gomera. Undoubtedly round-headedness reaches its maximum for the archipelago in the females of this island.

Of Verneau's 66 female crania from Gran Canaria, about 8 per cent were brachycephalic. He states that the greater part of the females present a relatively elongated cranium. Subdolichocephalic crania (75–77.76) constitute 47 per cent of the total; next in order come the mesaticephals (77.77–79.99); then the true dolichocephals; and lastly the sub-brachycephals (80–83.32). There were certainly far fewer brachycephalic females in Canaria than

in Tenerife or Gomera, and many more dolichocephals — probably more than 20 per cent of the latter.

Finally, in Hierro it is apparent that female dolichocephaly reaches its maximum — 34.7 per cent of the combined series of 49 crania measured by Verneau, Chil, and the present writer — while there are only 3 brachycephalic crania (6.1 per cent), and 29 mesocephalic crania (59.2 per cent).

In general the female series agree with the male series in that there are most brachycephals in Gomera, next in Tenerife; while there are very few brachycephals in Gran Canaria and Hierro and many more true long-heads.

It should be noted that Verneau's 4 male crania from La Palma include 2 dolichocephals and 2 mesocephals, while the one male cranium measured by the writer is very dolichocephalic. Of 4 female crania from La Palma, measured by Verneau, 2 were dolichocephalic and 2 mesocephalic.

The Fuerteventura male crania are, in one case, dolichocephalic and, in the other, mesocephalic.

TABLE 30. Length-Height Index

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	239	60–78	70.47±0.10	2.40±0.07	3.40±0.10
Gomera	33	69–77	72.39±0.28	2.42±0.20	3.35±0.28
Gran Canaria	20	65–77	71.50±0.48	3.17±0.34	4.43±0.47
Hierro	12	67–74	70.67±0.39	2.01±0.28	2.85±0.39
Females:					
Tenerife	81	62–76	70.33±0.17	2.30±0.12	3.28±0.17
Gomera	10	69–76	72.70 ...	....	....
Gran Canaria	6	70–80	73.50 ...	....	....
Hierro	7	65–74	69.70 ...	....	....

The means given above were calculated without regard to the figures to the right of the decimal point in the individual indices. The true means are therefore slightly higher — in the case of Tenerife males 70.98 instead of 70.47. The true mean of this index in the case of 18 crania of doubtful sex is 71.03 and the combined mean for 334 crania of both sexes is 70.94.

Verneau's mean for Tenerife males is 70.75, that of Von Behr 70.6, and that of Shrubsall 70.5. The agreement in regard to the mean length-height index is then very close.

In the case of Gomera our true mean is 72.84 as against our statistical mean of 72.39. Verneau's mean for Gomera males is 71.7.

The statistical mean of length-height indices for males from Gran Canaria is 71.5, and various regional means given by Verneau range from 67 to 79. Apparently the male population of Canaria was more variable in respect to this index than the inhabitants of Tenerife and Gomera.

In Hierro, regional means of this index as given by Verneau range from 70.81 to 72.04. This agrees closely with our statistical mean of 70.67 for male crania.

In the case of Tenerife females our mean for the length-height index (70.33) is surpassed by those of the other investigators. Verneau gives 72.11, Shrubsall 72.2, and Von Behr's series yields a mean of 72.2.

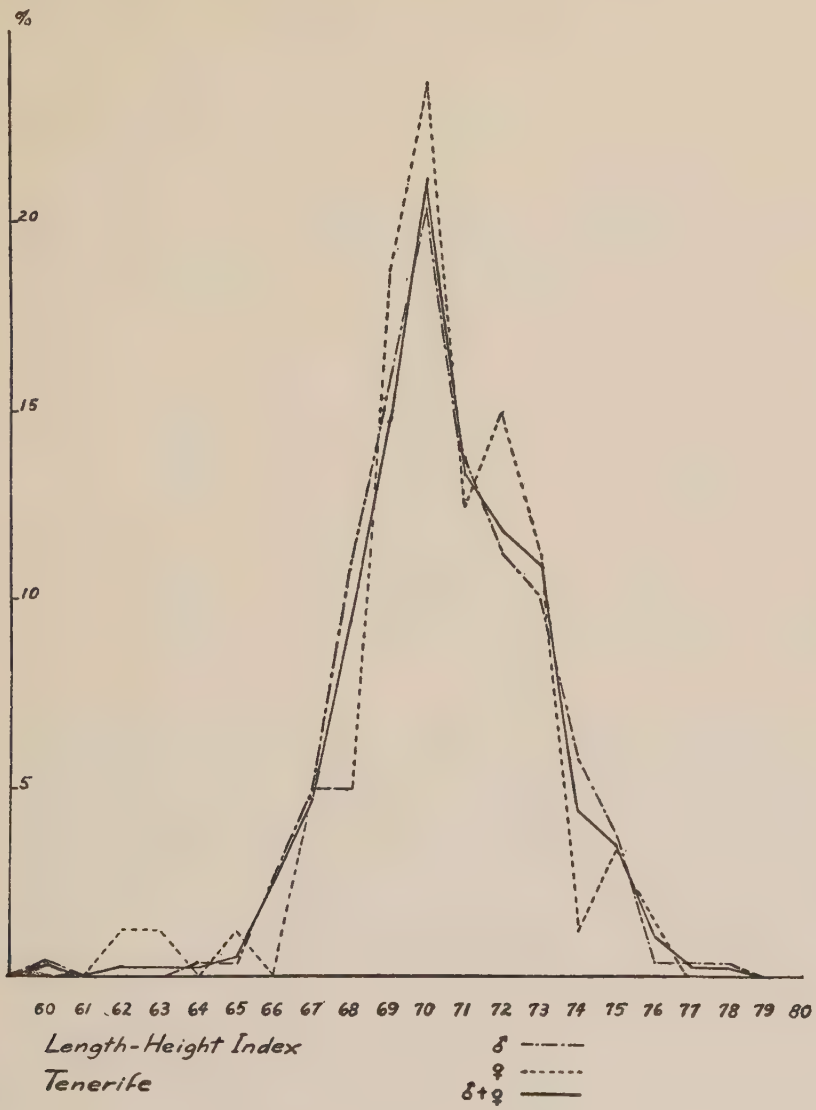


Fig. 4

For Gomera our mean of 72.7 is slightly higher than that of Verneau (72.25). Of the short series of Gran Canaria females the mean is 73.5, whereas Verneau's means range from 67 to 76.

Our 7 female crania from Hierro yield a very low length-height index (69.7). Verneau's more ample series yielded regional means varying from 70.9 to 72.2. As a matter of fact the mean of our series is fictitious, since the series consists of 2 crania with indices of 65, two with indices of 68, and 3 with indices of 74.

For male crania from La Palma, Verneau's means are 70.43 and 73.68, while the mean for females is 69.23. Our one male cranium from La Palma had a length-height index of 73.74.

Both of our male crania from Fuerteventura had low indices, 68.42 and 69.54 respectively.

In general it appears that the highest average length-height index is found in Gomera, with Gran Canaria next in order. In Tenerife and Hierro the means are somewhat lower.

TABLE 31. Divisions of Length-Height Index. (Comparative)

	Chamaecephalic (x–69.9)		Orthocephalic (70–74.9)		Hypsicephalic (75–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males						
Tenerife						
Hooton	80	33.5	147	61.5	12	5.0
Shrubsall	?	24.1	?	56.9	?	19.0
Gomera	4	12.1	22	66.7	7	21.2
Gran Canaria	5	25.0	11	55.0	4	20.0
Hierro	3	25.0	9	75.0	0	0
Females:						
Tenerife						
Hooton	26	32.9	49	63.3	3	3.9
Shrubsall	?	30.8	?	50.0	?	19.2
Gomera	0	0	9	90.0	1	10.0
Gran Canaria	0	0	4	66.6	2	33.3
Hierro	4	57.1	3	42.8	0	0

Very scant comparative data are available for the subdivision of the length-height index in Canary Islands crania. For Tenerife the data of our own series are ample. About one-third of the crania of both sexes are chamaecephalic, and only 4 per cent to 5 per cent hypsicephalic. The composition of the sex groups is therefore practically identical. Again, of 18 doubtful crania 7, or 38.8 per cent, are chamaecephalic; and 2, or 11.1 per cent, are hypsicephalic. Shrubsall's series contains about 19 per cent of hypsicephals, and less orthocephals and chamaecephals than the proportions found in our series. Verneau gives no percentage groupings, but states that 50 per cent of his masculine crania fall below the mean (70.75), and 48 per cent above the mean. It is apparent therefore that the Tenerife series measured by Verneau contains a larger percentage of chamaecephals than our series.

Our series of male crania from Gomera, with only 12 per cent of chamaecephals and 21 per cent of hypsicephals, indicates a very different composition from that of the population of Tenerife. In our short series of Gomera females there are no chamaecephals. Verneau's male series from Gomera, on the contrary, apparently contained few hypsicephals.

Our short series of males from Gran Canaria contains 25 per cent of chamaecephals and 20 per cent of hypsicephals. Of 9 local groups of Gran Canaria crania measured by Verneau, 4 show hypsicephalic maxima, and 2 groups show hypsicephalic means. In the case of females, our 6 crania include no chamaecephals and 2 hypsicephals. Two of Ver-

neau's local groups of females show hypsicephalic means, and one group shows a chamaecephalic mean. It is evident that the population of Gran Canaria was more variable than

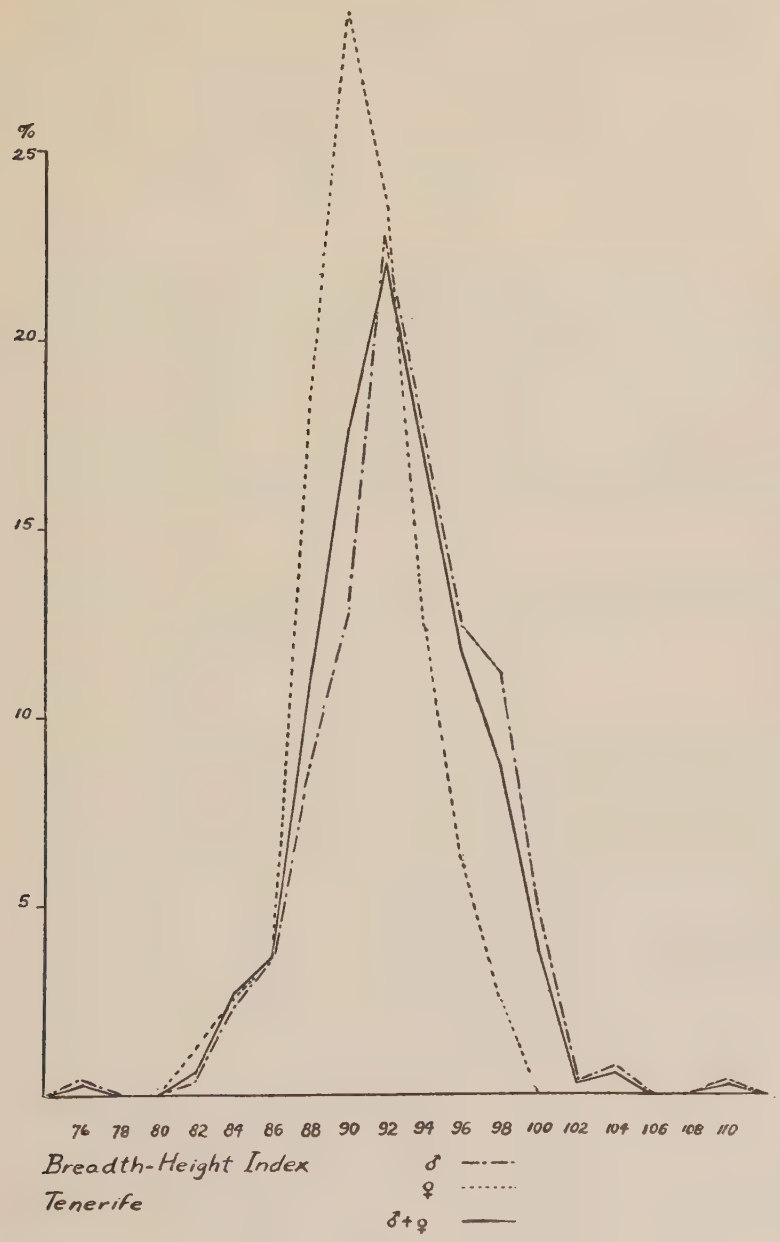


Fig. 5

that of Tenerife in regard to the length-height index, a fact which is indicated also by the coefficient of variation in our series. There were apparently fewer chamaecephals in Gran Canaria and more hypsicephals.

TABLE 32. Breadth-Height Index

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	239	76–109	93.52±0.18	4.15±0.13	4.43±0.14
Gomera	33	85–103	93.55±0.52	4.66±0.39	4.98±0.41
Gran Canaria	20	88–103	94.85±0.62	4.09±0.44	4.31±0.46
Hierro	12	88–100	92.92±0.68	3.47±0.48	3.73±0.51
Females:					
Tenerife	79	81–98	90.33±0.24	3.14±0.17	3.97±0.21
Gomera	10	87–96	91.30 ...	....	....
Gran Canaria	6	92–100	97.00 ...	....	....
Hierro	7	88–100	93.57 ...	....	....

Our scanty data for Hierro indicate an entire absence of hypsicephals. But the ranges of Verneau's more ample series from Hierro indicate that some hypsicephals were present.

In general it seems that the largest proportion of chamaecephals occurred in Tenerife and Hierro and the smallest in Gomera.

The combined mean of the breadth-height index of 338 male, female, and doubtful Tenerife crania is 92.44. The males average 93.52, and the females 90.33. For males the mean given by Verneau is 93.15, and for females 92.23. Shrubsall gives 92.9 for males and

TABLE 33. Divisions of the Breadth-Height Index. (Comparative)

	Tapeinocephalic (x–91.9)		Metriocephalic (92–97.9)		Akrocephalic (98–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males						
Tenerife						
Hooton	92	38.5	127	53.1	20	8.3
Shrubsall [1]	22	32.8	32	47.7	13	19.4
Shrubsall [1]	?	40.0	?	45.5	?	14.5
Gomera						
Hooton	14	42.4	13	39.4	6	18.2
Shrubsall [1]	6	23.1	12	46.1	8	30.7
Gran Canaria						
Hooton	3	15.0	13	65.0	4	20.0
Verneau	?	23.4	?	46.8	?	29.8
Shrubsall [1]	3	7.9	17	44.7	18	47.4
Hierro						
Hooton	5	41.6	5	41.6	2	16.7
Females:						
Tenerife						
Hooton	55	9.6	22	27.8	2	2.5
Shrubsall [1]	23	51.1	19	42.2	3	6.6
Shrubsall [1]	?	44.4	?	48.1	?	7.4
Gomera						
Hooton	4	40.0	6	60.0	0	0
Shrubsall [1]	10	52.6	6	31.5	3	15.8
Gran Canaria						
Hooton	0	0	2	33.3	4	66.6
Shrubsall [1]	3	15.0	13	65.0	4	20.0
Hierro						
Hooton	3	42.8	3	42.8	1	14.3

[1] These divisions are computed from seriations of the cranial collection at Las Palmas, derived from a printed copy of measurements lent to Shrubsall by Ramon Gomez of Puerto Orotava.

92.1 for females. Von Behr's figures are 91.4 for each sex. Our mean figure for females is thus somewhat lower than the means of the other observers.

In the case of Gomera males, the mean of the breadth-height index in our series is practically the same as that of Tenerife (93.55), while the mean of 10 females is somewhat higher (91.30). The means for males and females of Gomera measured by Verneau are 91.03 and 89.29 respectively.

The means of the breadth-height index for Gran Canaria are considerably higher than those of Tenerife or Gomera (94.95 and 97.0 respectively). Verneau's mean for local groups seems to indicate a considerable variation in this index with prevailingly high averages in both sexes.

In the island of Hierro the mean of the breadth-height index approximates 93 in both sexes, which seems to agree with the general trend of Verneau's local means.

The one cranium from La Palma measured by the writer, has an index of 104.29. Verneau gives as means for males 94.93 (3 crania) and 97.22 (one cranium). For females the average of 5 crania is 90.65.

Our 2 crania from Fuerteventura have breadth-height indices of 90.28 and 96.48 respectively.

An analysis of Table 33 shows that akrocephalic crania are rarest in Tenerife, and especially among the females. On the other hand, the largest proportions of tapeinocephalic crania occur among the females from this island. These results are in consequence of the small basion-bregma height of Tenerife crania.

It is equally apparent from the table, that Gran Canaria contained the largest proportions of akrocephals (29.8 per cent of Verneau's ample male series). Verneau states that 20.78 per cent of his male series from this island are hypsistenocephalic (i.e. with breadth-height indices over 100). Verneau found only 2 hypsistenocephals in his Tenerife males, and in the series of 239 Tenerife males measured by the present writer were 11 crania belonging to this category. On the other hand, our small series of 20 Gran Canaria males included 4 crania with indices of 100 or more and a female series of 6 included 2 such hypsistenocephals.

THE FACE

TABLE 34. Maximum Bizygomatic Diameter

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	225	119–146	132.18±0.24	5.41±0.17	4.09±0.13
Gomera	28	120–140	132.57±0.62	4.85±0.44	3.66±0.32
Gran Canaria	15	121–145	132.07±1.22	7.03±0.86	5.32±0.66
Hierro	12	112–134	125.91±1.21	6.21±0.86	4.93±0.68
Females:					
Tenerife	67	101–131	121.75±0.39	4.79±0.30	3.94±0.22
Gomera	7	117–131	124.57 ...	....	....
Gran Canaria	6	117–124	121.67 ...	....	....
Hierro	6	100–125	118.16 ...	....	....

TABLE 35. Maximum Bizygomatic Diameter. (Comparative)

	Hooton		Verneau		Chil		Von Behr	
	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Males:								
Tenerife	225	132.2	?	136	21	132.9	?	134.6
Gomera	28	132.6	?	134	18	133.1	..	....
Gran Canaria	15	132.1	?	130–137	28	132.2	..	....
Hierro	12	125.9	?	130–135	6	129.8	..	....
Females:								
Tenerife	67	121.8	?	125	..	....	?	124.7
Gomera	7	124.6	?	125	13	123.8	..	....
Gran Canaria	6	121.7	..	...	..	....	..	....
Hierro	6	118.2	?	121–125	7	121.9	..	....

The crania of our series exhibit somewhat smaller bizygomatic diameters than those of Verneau, and the means of our short Hierro series are probably too low.

TABLE 36. Alveon-Nasion Height

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	237	55–83	69.66±0.20	4.66±0.14	6.69±0.21
Gomera	31	60–75	66.26±0.50	4.12±0.35	6.20±0.53
Gran Canaria	19	61–78	69.26±0.64	4.14±0.45	5.98±0.65
Hierro	12	61–69	64.92±0.44	2.28±0.31	3.51±0.48
Females:					
Tenerife	76	53–72	63.71±0.29	3.75±0.20	5.88±0.32
Gomera	11	60–70	64.46 ...	....	....
Gran Canaria	5	63–67	64.40 ...	....	....
Hierro	6	61–69	63.83 ...	....	....

The older investigators, such as Verneau and Chil, do not give the alveon-nasion height.[1] Von Behr's averages for Tenerife are: males 69.6 (range 54–79), females 65.9 (range 56–77). His series agrees with ours in case of males, and the average of his females is about one millimeter higher than ours. From the table above it appears that average facial heights of males in Tenerife and Cran Canaria are about the same; in Gomera they are somewhat lower, and lowest of all in Hierro. The female series exhibit no significant inter-insular differences.

TABLE 37. Upper Facial Index

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	214	43–62	52.14±0.14	3.08±0.10	5.91±0.27
Gomera	28	45–54	49.32±0.34	2.70±0.24	5.47±0.49
Gran Cenaria	15	48–60	52.40±0.62	3.12±0.44	5.94±0.73
Hierro	11	47–58	51.45±0.60	2.93±0.42	5.70±0.82
Females:					
Tenerife	64	42–59	51.81±0.28	3.29±0.20	6.35±0.38
Gomera	7	49–54	51.39 ...	....	....
Gran Canaria	5	51–55	52.60 ...	....	....
Hierro	5	49–64	54.40 ...	....	....

The statistical means of the upper facial index, given in Table 37, are, on an average, about five-tenths of an index unit lower than the true means, since the figures to the right

[1] The term "alveon" has long been in use in the Harvard Laboratory as a synonym of "prosthion," meaning "the alveolar point."

of the decimal point were disregarded in the original seriations. The true mean for males of Tenerife is 52.67, for females 52.26, and for 295 male, female, and doubtful crania, 52.60. Since Verneau and Chil use the obsolete ophryon as the upper point for measuring the upper facial height, their upper facial indices are not strictly comparable with ours. Sergi [1] re-

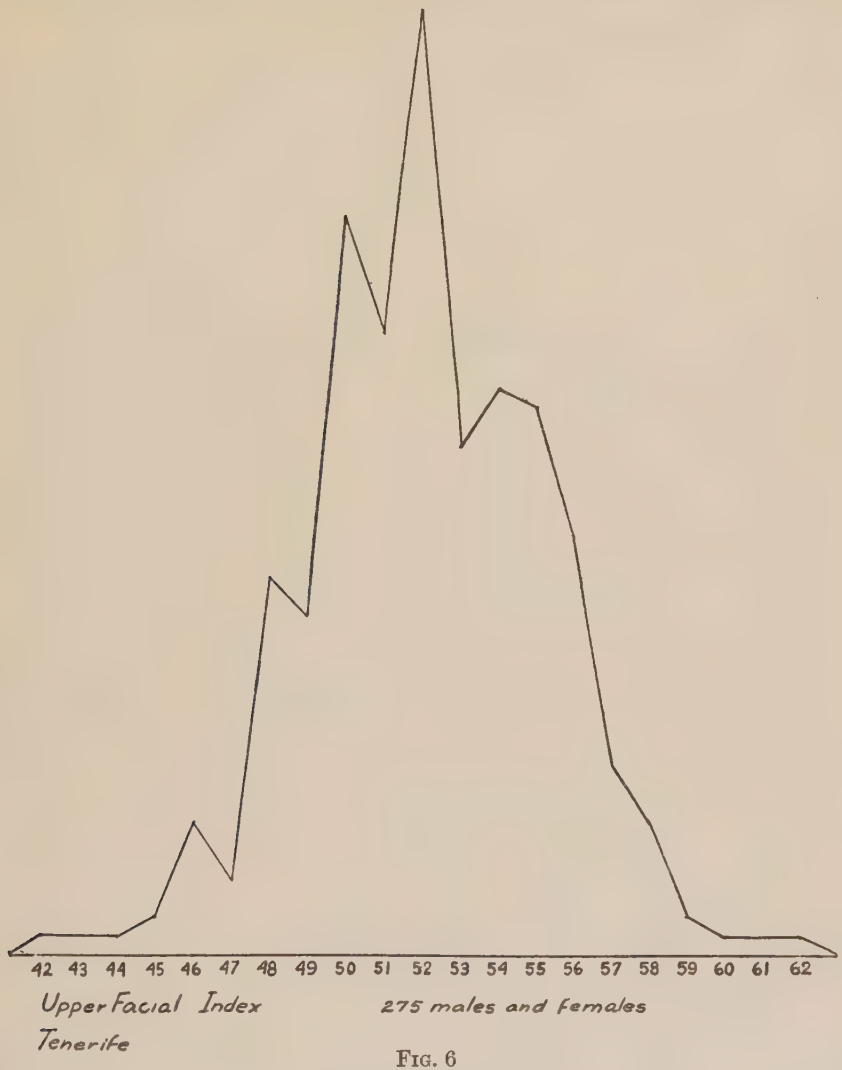


FIG. 6

duced Verneau's data to nasion-alveon height and secured an average of 52.52 for the combined sexes. Shrubsall gives as the mean for males 50.2 and for females 47.7. These facial indices of Shrubsall's series reflect the larger number of short-faced brachycephals in his Tenerife crania, as compared with ours. Von Behr's figures are 53.8, and 52.6, respectively, for males and females.

The males of Gomera seem to have lower facial indices than those of Tenerife or Gran

[1] G. Sergi. The Mediterranean Race. London, 1901, p. 133.

Canaria, according to Table 37. Verneau found a similar result in using the upper facial index of Broca, which gave a mean, in the case of males, of 67.84 for Tenerife, and 65.67 for Gomera.

Apart from the Tenerife series, the female crania from the other islands are so few that little confidence in their representative character can be felt.

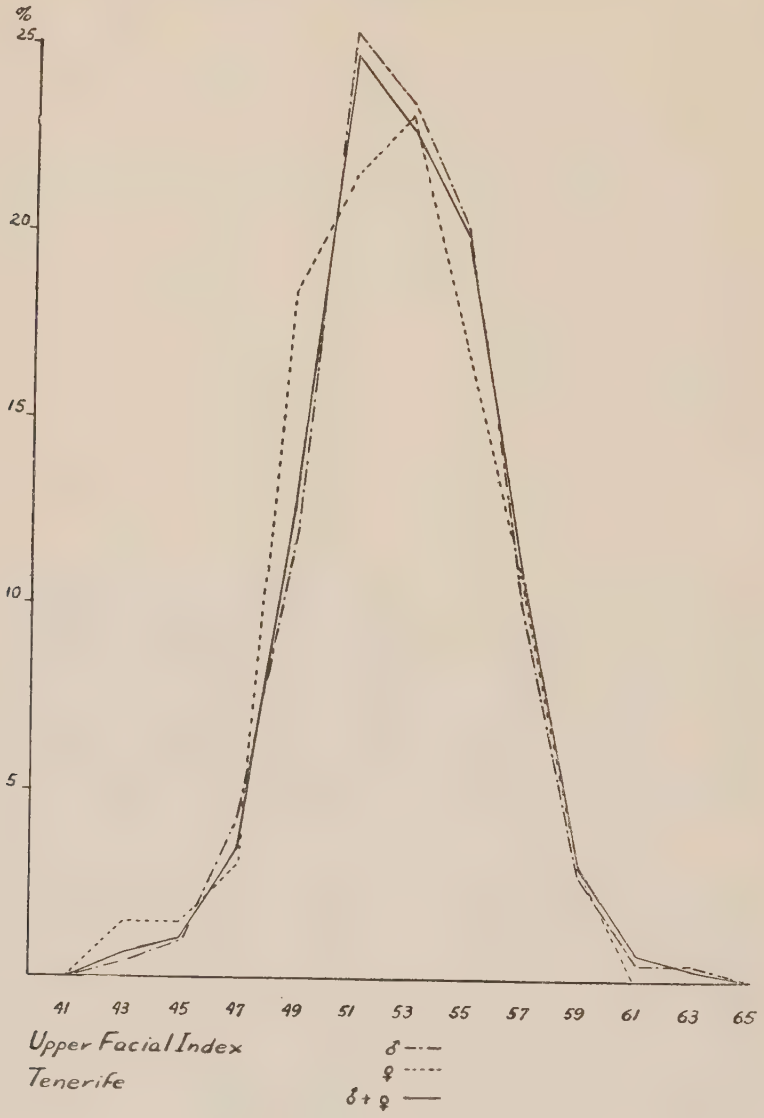


Fig. 7

Table 38, showing the distribution of the upper facial index into euryene (low and broad), mesene (medium), and leptene (long and narrow), indicates a similar composition of the male groups from Tenerife, Gran Canaria, and Hierro. The series from the last-named two islands are very short and there are no comparable data. Shrubsall states that

TABLE 38. Divisions of the Upper Facial Index

	Euryene (x–49.9)		Mesene (50–54.9)		Leptene (55–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males:						
Tenerife	37	17.3	128	59.8	49	22.9
Gomera	14	50.0	14	50.0	0	0
Gran Canaria	4	26.7	8	53.3	3	20.0
Hierro	3	27.3	6	54.6	2	18.2
Females:						
Tenerife	16	25.0	31	48.4	17	26.5
Gomera	1	14.3	6	85.7	0	0
Gran Canaria	0	0	4	80.0	1	20.0
Hierro	1	20.0	2	40.0	2	40.0

42.9 per cent of his Tenerife males were euryene and 57.1 per cent leptene. It has been noted previously that his series contained a probably unrepresentative number of brachycephals. Von Behr's male series of 55 Tenerife crania contains 20 per cent of euryene crania, 58.2 per cent of mesene crania, and 21.8 per cent of leptene crania. This division is almost identical with that of our male series. For 25 female crania the divisions of Von Behr's series are: 12 per cent euryene, 60 per cent mesene, 28 per cent leptene.

The males of Gomera (28 in all) are half euryene and half mesene. There appear to have been many more short, broad-faced males in this island than elsewhere in the archipelago.

It may be of interest here to reproduce Verneau's divisions of the upper facial index of Broca, based on the ophryon-alveon height.

TABLE 39. Upper Facial Index of Broca: Divisions of Verneau's Canary Series

	Microseme (x–65.9)	Mesoseme (66–68.9)	Megaseme (69–x)
	Per Cent	Per Cent	Per Cent
Males:			
Tenerife	25.92	37.04	37.04
Gomera	53.86	23.07	23.07
Gran Canaria	0–20.45	0–25.0	59.10–100
Hierro	29.4–30	30–35.0	35–40
Females:			
Tenerife	30	40	30
Gomera	37.50	50.0	12.50
Gran Canaria	0.1–28.6	0–66.6	42.9–100
Hierro	45.5–62.5	25–40.9	12.5–13.6

From a perusal of Table 39 it may be learned that Verneau finds the largest proportions of short, broad-faced individuals in Gomera, as was the case also in the series of the present writer. The inhabitants of Gran Canaria, on the other hand, seemed to show the greatest number of long, narrow-faced males, a result which does not appear in our short Gran Canaria series.

TABLE 40. NASAL HEIGHT

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	250	40–60	50.84±0.15	3.48±0.10	6.84±0.21
Gomera	34	45–58	49.35±0.36	3.10±0.25	6.28±0.51
Gran Canaria	20	44–55	49.80±0.44	2.89±0.31	5.80±0.62
Hierro	13	44–51	47.92±0.47	2.52±0.33	5.25±0.69
Females:					
Tenerife	82	40–53	46.35±0.22	2.90±0.15	6.25±0.33
Gomera	12	43–50	47.00 ...	....	....
Gran Canaria	6	47–50	48.33 ...	....	....
Hierro	7	44–50	46.57 ...	....	....

TABLE 41. NASAL BREADTH

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	250	19–33	24.14±0.09	1.60±0.05	6.51±0.20
Gomera	34	20–27	24.29±0.18	1.54±0.12	6.33±0.52
Gran Canaria	20	23–27	24.80±0.17	1.16±0.12	4.65±0.50
Hierro	13	18–27	24.08±0.42	2.26±0.30	9.38±1.24
Females:					
Tenerife	81	20–27	23.15±0.12	1.58±0.17	6.82±0.36
Gomera	12	22–29	23.75 ...	....	....
Gran Canaria	6	22–25	23.67 ...	....	....
Hierro	7	22–27	24.00 ...	....	....

The mean nasal height of 250 Tenerife males is 50.8 mm. The range is from 40 mm. to 60 mm. Verneau gives 52 mm. for his Tenerife males (range 42–57 mm.); Von Behr's mean is 51.5 mm. (range 41–59 mm.). For Tenerife females our mean of 46.3 mm. is exceeded by the mean of Verneau (48 mm.), and that of Von Behr (48.6 mm.).

Verneau gives 51 mm. for mean nasal height of Gomera males, whereas our series yields a mean of 49.35. His mean for females is 48 mm., and the mean of our series is 47 mm.

For Gran Canaria and Hierro Verneau gives no general means of nasal height, but only regional means. These in general exceed our means by several millimeters.

Our mean of nasal breadth for Tenerife males is 24.14 mm. and that of Verneau is 24 mm. In case of females our mean is 23.15 and that of Verneau is 23 mm. Our mean for Gomera males is 24.29 and that of Verneau 24 mm. For females our mean is 23.75 mm. and that of Verneau 24 mm.

TABLE 42. NASAL INDEX

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	250	37–62	47.46±0.19	4.48±0.14	9.43±0.28
Gomera	34	42–58	49.09±0.45	3.86±0.32	7.86±0.64
Gran Canaria	20	41–56	49.65±0.46	3.09±0.33	6.22±0.66
Hierro	13	36–60	50.23±0.98	5.24±0.69	10.42±1.38
Females:					
Tenerife	80	41–57	49.58±0.28	3.79±0.20	7.64±0.41
Gomera	12	44–58	50.17 ...	....	....
Gran Canaria	6	44–51	48.83 ...	....	....
Hierro	7	47–56	51.57 ...	....	....

The mean nasal index of Tenerife males is 47.46 in our series, whereas the series of Verneau yielded a mean of 46.32, and that of Shrubsall 47.6. In the case of the females from Tenerife our mean of 49.58 is also higher than that of Verneau (47.05). Shrubsall states

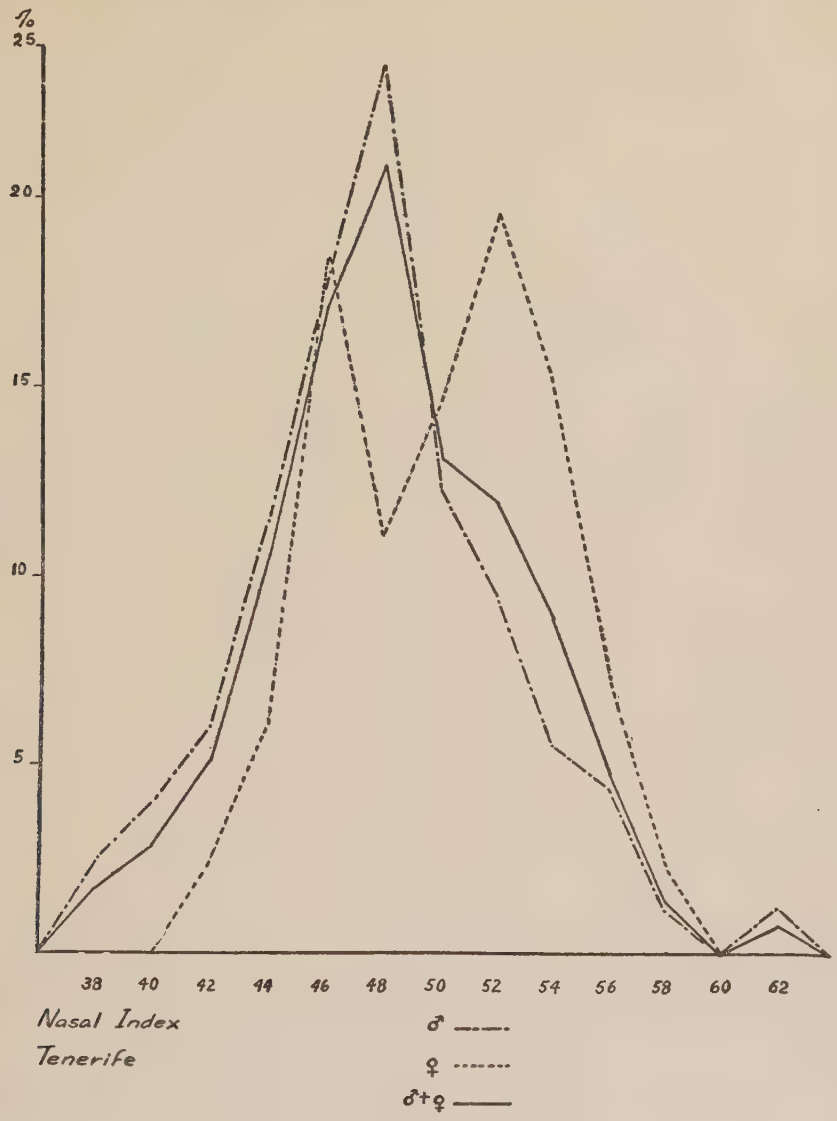


FIG. 8

that the mean nasal index of his Tenerife females is 41.5, which is incorrect. The mean of his female series is 48.6.

Our Gomera series shows a somewhat higher index (49.09) than the Gomera males measured by Verneau (47.05). A series of 27 Gomera male crania from Las Palmas yields a mean nasal index of 47.63. In the case of Gomera females our mean of 50.17 is close to that of Verneau (50.0) and higher than that of the Las Palmas series (47.8).

The mean nasal index of 20 male crania from Gran Canaria is 49.65, whereas the mean of 36 from the Las Palmas series is 47.73. The mean of our 6 female crania from Gran Canaria is 48.83, while 21 crania of the Las Palmas series yielded a mean of 49.39.

TABLE 43. Martin's Divisions of the Nasal Index

	Leptorrhine (x–46.9)		Mesorrhine (47–50.9)		Chamaerrhine (51–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males:						
Tenerife	105	42.0	90	36.0	55	22.0
Gomera	9	26.4	12	35.2	13	38.2
Gran Canaria	3	15.0	10	50.0	7	35.0
Hierro	1	7.7	7	53.8	5	38.5
Females:						
Tenerife	22	27.2	23	28.4	36	44.4
Gomera	2	16.7	4	33.3	6	50.0
Gran Canaria	1	16.7	4	66.6	1	16.7
Hierro	0	0	3	42.9	4	57.1

TABLE 44. Broca's Divisions of the Nasal Index. (Comparative)

	Leptorrhine (x–47.9)		Mesorrhine (48–52.9)		Platyrrhine (53–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males:						
Tenerife						
Hooton	134	53.6	85	34.0	31	12.4
Verneau	?	74.07	?	18.52	?	7.41
Shrubsall	?	50.0	?	32.8	?	17.2
Von Behr	46	62.2	23	33.8	3	4.0
Gomera						
Hooton	13	38.2	14	41.2	7	20.6
Verneau	?	34.6	?	57.7	?	7.6
Shrubsall [1]	14	51.8	12	44.4	1	3.7
Gran Canaria	3	15.0	16	80.0	1	5.0
Shrubsall [1]	18	50.0	15	41.7	3	8.3
Hierro						
Hooton	2	15.4	7	53.8	4	30.7
Verneau	?	70–70.6	?	20.6–30.0	?	0–8.82
Females:						
Tenerife						
Hooton	31	38.3	30	37.0	20	24.7
Verneau	?	61.5	?	30.8	?	7.7
Shrubsall	?	39.4	?	30.3	?	30.3
Von Behr	19	51.3	17	46.0	1	2.7
Gomera						
Hooton	3	25.0	6	50.0	3	25.0
Verneau	?	12.5	?	50.0	?	37.5
Shrubsall [1]	8	40.0	8	40.0	4	20.0
Gran Canaria						
Hooton	1	16.7	5	83.3	0	0
Verneau	?	42–60.0	?	0–50.0	?	0–50.0
Shrubsall [1]	7	33.3	9	42.9	5	23.8
Hierro						
Hooton	1	14.2	3	42.8	3	42.8
Verneau	?	25–35.4	?	23.7–62.5	?	12.5–40.9

[1] Calculated from the seriation of the Las Palmas series given by Shrubsall.

Our 13 Hierro males had a mean nasal index of 50.2, whereas Verneau's much larger series yields means from 46–47. It is evident that our Hierro series is not representative in respect to mean nasal index. Regional means of Verneau's female series from Hierro vary from 47 to 51. Our 7 crania averaged 51.57.

It is apparent that the nasal index is extremely variable in these islands. The mean index is probably not significant unless the series is very long.

Table 43 gives the division of the nasal index according to Martin, and Table 44 the division of the index according to Broca. An inspection of these tables impresses upon one the extreme variability of this index. The various investigators differ widely in their findings. Our own long series of Tenerife males is the only one which inspires confidence as a representative cross-section of the population of that island in antiquity. In general there were far more chamaerrhine or platyrrhine individuals among the females of the several islands than among the males. Most islands seem to have contained more leptorrhine males than mesorrhine males, with the platyrrhines constituting the smallest group. Few reliable differences between the various islands can be established. It seems, however, that Gomera and Hierro had more platyrrhines than the other islands.

TABLE 45. Mean Orbital Index

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	252	66–95	81.42±0.21	4.97±0.15	6.10±0.18
Gomera	34	71–86	78.09±0.50	4.35±0.36	5.57±0.46
Gran Canaria	20	70–96	81.15±0.91	6.04±0.64	7.45±0.79
Hierro	13	72–88	80.23±0.85	4.54±0.60	5.66±0.75
Females:					
Tenerife	81	70–100	82.78±0.37	4.92±0.26	5.94±0.28
Gomera	11	75–92	82.46 ...	....	....
Gran Canaria	6	80–88	83.00 ...	....	....
Hierro	7	80–90	85.43 ...	....	....

The mean orbital index is another extremely variable index. The average for Tenerife males is 81.42, which agrees closely with that of Verneau (81.27). The mean of Shrubsall's male series is 83.6. For Tenerife females our mean is 82.78, that of Verneau, 85.09; while Shrubsall's series yields a mean for females of 87.2.

Our mean for the orbital index among Gomera males is 78.09, and that of Verneau 77.50. But the Las Palmas series of 27 Gomera males yields an average orbital index of 83.48. Our females from Gomera average 82.78, Verneau's mean is 83.78, while the Las Palmas series of 20 female crania averages 86.25.

The mean of 20 male crania in our series from Gran Canaria is 81.15, while the mean of 37 crania of the Las Palmas series is 83.41. Verneau's regional means range from 79 to 89. The mean of our 6 females from Gran Canaria is 83, while that of 21 female crania of the Las Palmas series is 85.33. Verneau's regional means for Canaria females range from 85.5

to 94.7. Probably hypsiconch or megaseme orbits were more abundant in Gran Canaria than in Tenerife or Gomera.

The mean orbital index of our 13 Hierro males is 80.23. Verneau's regional means for Hierro males range from 78.9 to 84.2. His females have average orbital indices from 83.3

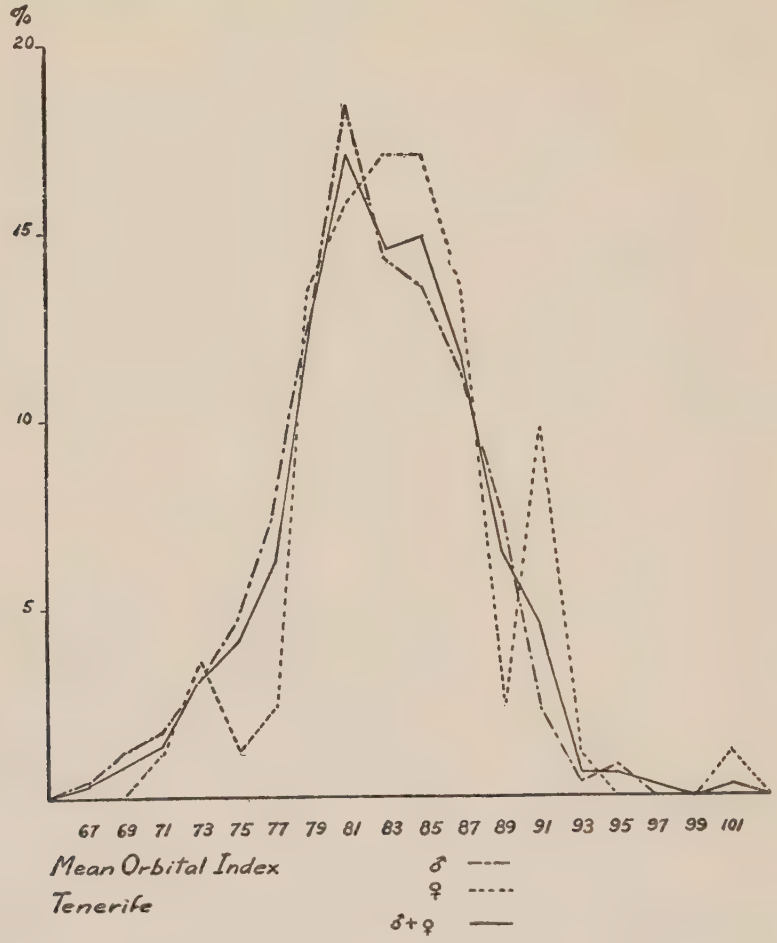


Fig. 9

to 88.6 in different parts of the island. Our 7 female crania have a mean orbital index of 85.4.

Our single male cranium from Las Palmas has a mean orbital index of 74. One of Verneau's male crania had an orbital index of 69, but 4 others averaged 82.05. His female crania averaged 86.49.

Two male crania from Fuerteventura have orbital indices of 81 and 84.

All of the islands show a predominance of crania with low, broad orbits (chamaeconch or microseme). High (or hypsiconch) orbits are much more common in the female crania than in the male crania. It is remarkable that not only the Tenerife series measured by

TABLE 46. Divisions of the Mean Orbital Index. (Comparative)

	Chamaeconch (x–82.9)		Mesoconch (83–88.9)		Hypsiconch (89–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males:						
Tenerife						
Hooton	148	58.7	86	34.1	18	7.1
Verneau	?	55.56	?	33.3	?	11.1
Shrubsall [1]	?	48.5	?	31.8	?	19.7
Gomera						
Hooton	26	76.5	8	23.5	0	0
Verneau	?	81.5	?	11.1	?	7.4
Shrubsall [1]	13	48.1	8	29.6	6	22.2
Gran Canaria						
Hooton	16	80.0	1	5.0	3	15.0
Shrubsall [1]	13	35.1	17	45.9	7	18.9
Hierro						
Hooton	9	69.2	4	30.8	0	0
Verneau	?	52.9–70.0	?	30–38.2	?	0–8.8
Females:						
Tenerife						
Hooton	39	48.1	32	39.5	10	12.3
Verneau	?	42.9	?	28.6	?	28.6
Shrubsall [1]	?	29.0	?	25.8	?	45.2
Gomera						
Hooton	6	76.5	4	36.4	1	9.1
Verneau	?	37.5	?	50.0	?	12.5
Shrubsall [1]	2	10.0	13	65.0	5	25.0
Gran Canaria						
Hooton	3	50.0	3	50.0	0	0
Shrubsall [1]	9	42.8	3	14.2	9	42.8
Hierro						
Hooton	2	28.6	3	42.9	2	28.6
Verneau	?	31.8–50	?	25–45.5	?	22.7–25

[1] Cf. note to Table 33.

Shrubsall, but also the Las Palmas seriation published by him, show fewer chamaeconch indices and more hypsiconch crania than the series of the other investigators. Von Behr's series is not available for the comparison, since his orbital breadth was measured from lacrimale instead of from dacryon.

TABLE 47. External Length of Palate

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	206	46–61	53.37 ±0.14	3.04 ±0.10	5.70 ±0.19
Gomera	26	46–60	53.0 ±0.47	3.57 ±0.33	6.73 ±0.63
Gran Canaria	14	47–61	53.57 ±0.81	4.51 ±0.57	8.43 ±1.07
Hierro	6	49–53	51.17 ...	....	....
Females:					
Tenerife	55	45–54	50.05 ±0.22	2.47 ±0.16	4.89 ±0.31
Gomera	7	45–53	50.14 ...	....	....
Gran Canaria	4	47–53	51.0 ...	....	....
Hierro	5	47–55	50.0 ...	....	....

TABLE 48. External Breadth of Palate

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	207	54–73	64.14±0.16	3.45±0.11	5.37±0.18
Gomera	26	56–66	60.77±0.39	2.93±0.27	4.32±0.40
Gran Canaria	14	55–69	63.0 ±0.56	3.09±0.39	4.75±0.60
Hierro	6	56–60	57.33 ...	....	....
Females:					
Tenerife	55	53–64	59.78±0.24	2.68±0.17	4.48±0.29
Gomera	7	55–60	58.0 ...	....	....
Gran Canaria	4	55–66	58.5 ...	....	....
Hierro	5	55–59	57.6 ...	....	....

The external length of the palate is about the same in males of all of the islands except Hierro, where it is possibly somewhat smaller. Among the females there is a practical identity of means from all the islands.

The external breadth of the palate seems to be significantly smaller in Gomera than in Tenerife or Gran Canaria, and still smaller in Hierro.

TABLE 49. Maxillo-alveolar (External Palatal) Index

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	206	96–139	119.96±0.31	6.65±0.22	4.68±0.16
Gomera	26	103–128	114.46±0.80	6.04±0.56	5.27±0.49
Gran Canaria	14	107–129	117.57±1.24	6.91±0.88	5.87±0.75
Hierro	6	105–122	112.83 ...	....	....
Females:					
Tenerife	55	106–130	119.15±0.52	5.72±0.37	4.80±0.31
Gomera	7	105–122	115.57 ...	....	....
Gran Canaria	4	101–126	112.75 ...	....	....
Hierro	5	101–125	111.60 ...	....	....

TABLE 50. Divisions of Maxillo-alveolar Index

	Dolichuranic (x–109.9)		Mesuranic (110–114.9)		Brachyuranic (115–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males:						
Tenerife	10	4.8	26	12.6	170	82.5
Gomera	6	23.1	8	30.8	12	46.1
Gran Canaria	1	7.1	5	35.7	8	57.1
Hierro	3	50.0	1	16.7	2	33.3
Females:						
Tenerife	4	8.0	4	8.0	47	84.0
Gomera	1	14.3	1	14.3	5	71.4
Gran Canaria	2	50.0	0	0	2	50.0
Hierro	2	40.0	2	40.0	1	20.0

No comparative data for the maxillo-alveolar index are available except the raw material of Von Behr. The mean of 65 Tenerife males measured by him is 120.6, which is sufficiently close to our statistical mean of 120. The mean of our female series, 119.1, agrees closely with the mean of Von Behr's series of 35, which is 118.7. The standard deviations and

coefficients of variation for this index are high, and the cases dealt with in the series are fewer than in most of the other index series for the obvious reason that, in the case of many aged specimens, loss of teeth and alveolar absorption render impossible the necessary

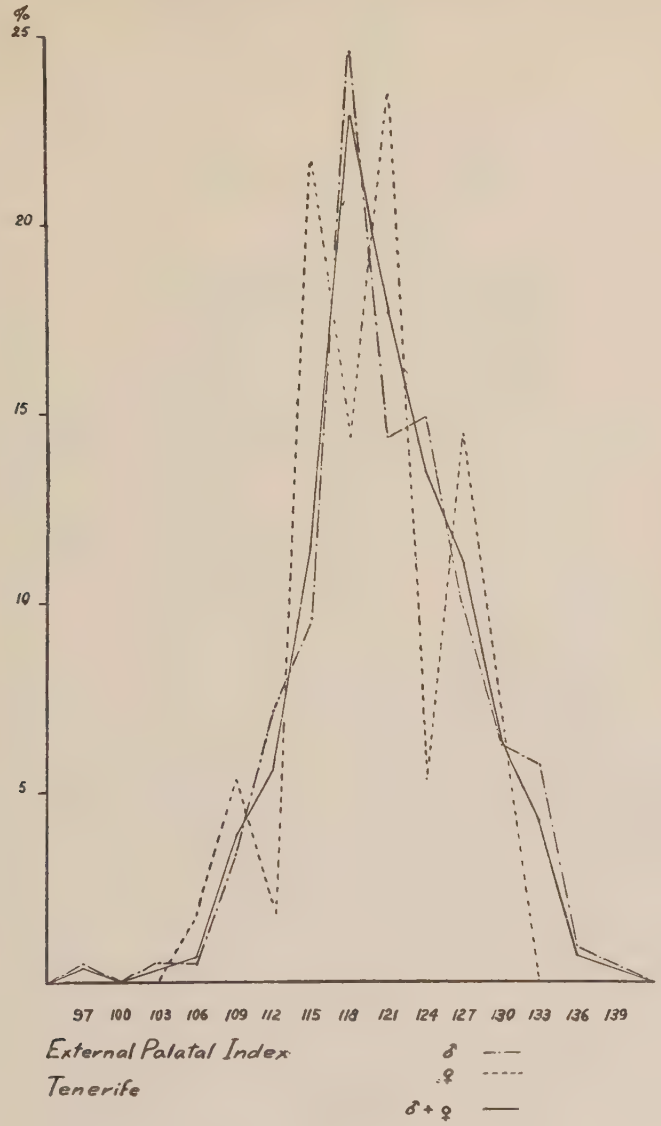


Fig. 10

measurements. A perusal of Table 49 shows that the population of Gomera had, on the average, relatively narrower and longer palates than that of Tenerife, although the series upon which this conclusion is based is rather inadequate.

Table 50 shows that a majority of crania from all the islands with the exception of Hierro are brachyuranic, as are the crania of most racial groups, but there seem to be more dolichuranic palates from Gomera, and possibly from Hierro, than from Tenerife or Gran Canaria. The long Tenerife series show the greatest preponderance of brachyuranic forms.

TABLE 51. BASION-ALVEON LENGTH

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	233	85–109	93.68±0.18	4.20±0.13	4.48±0.14
Gomera	31	81–105	93.71±0.63	5.24±0.45	5.60±0.50
Gran Canaria	19	87–103	94.79±0.80	5.20±0.57	5.48±0.60
Hierro	12	87–95	91.25±0.53	2.71±0.37	2.97±0.41
Females:					
Tenerife	79	78–99	88.84±0.33	4.42±0.24	4.98±0.27
Gomera	10	81–95	87.70 ...	....	....
Gran Canaria	5	89–96	92.20 ...	....	....
Hierro	..	....	....	....	....

TABLE 52. BASION-NASION LENGTH

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	242	89–113	100.04±0.17	3.85±0.12	3.85±0.12
Gomera	33	93–107	99.46±0.46	3.88±0.32	3.90±0.32
Gran Canaria	20	94–111	101.45±0.72	4.79±0.51	4.71±0.48
Hierro	12	86–107	97.75±1.03	5.31±0.73	5.43±0.75
Females:					
Tenerife	80	85–103	94.35±0.27	3.60±0.19	3.82±0.20
Gomera	10	90– 98	94.00 ...	....	....
Gran Canaria	6	93–103	97.33 ...	....	....
Hierro	..	....	....	....	....

TABLE 53. GNATHIC INDEX

	Number	Range	Mean	S. D.	V.
Males:					
Tenerife	233	83–104	93.25±0.15	3.42±0.11	3.66±0.11
Gomera	31	84–101	93.90±0.45	3.74±0.32	3.98±0.34
Gran Canaria	19	88–105	92.95±0.60	3.90±0.43	4.19±0.46
Hierro	12	84–104	93.08 ...	....	....
Females:					
Tenerife	78	84–100	93.33±0.26	3.35±0.18	3.59±0.19
Gomera	10	86–97	92.70 ...	....	....
Gran Canaria	5	91–96	93.80 ...	....	....
Hierro	6	93–105	97.50 ...	....	....

TABLE 54. DIVISIONS OF GNATHIC INDEX

	ORTHOGNATHOUS (x–97.9)		MESOGNATHOUS (98–102.9)		PROGNATHOUS (103–x)	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Males:						
Tenerife	209	89.7	22	9.4	2	0.8
Gomera	24	77.4	7	22.6	0	0
Gran Canaria	17	89.5	1	5.3	1	5.3
Hierro	11	91.7	0	0	1	8.3
Females:						
Tenerife	71	91.0	7	9.0	0	0
Gomera	10	100.0	0	0	0	0
Gran Canaria	5	100.0	0	0	0	0
Hierro	4	66.6	2	16.6	2	16.6

The gnathic index is not a very good measure of prognathism because it fails to take into consideration the facial height. On the basis of the mean of the index and the divi-

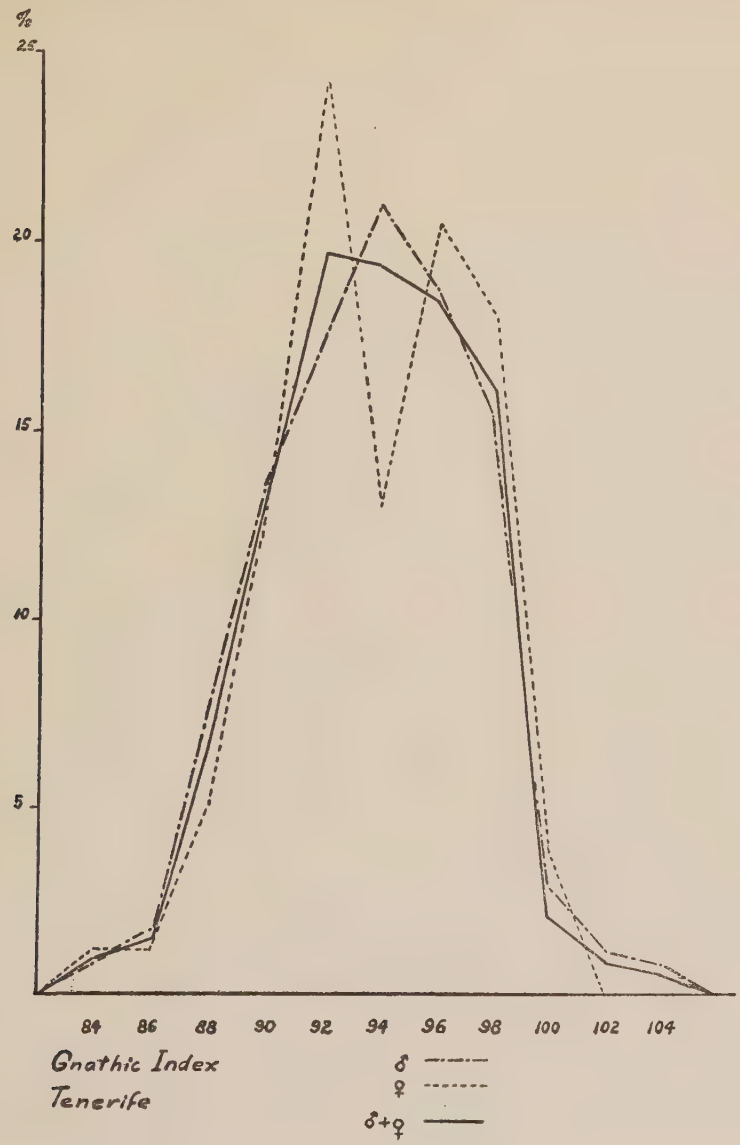


Fig. 11

sions of the index there seems to have been very little prognathism in any of the islands, with the possible exception of Hierro.

The present writer was unable to measure the cranial capacities of the skulls studied in the museum at Santa Cruz de Tenerife, because of the lack of proper apparatus. In the following table, capacity measurements of various investigators have been set against the cubic index of Manouvrier calculated on his own series and on their series by the present writer. This index is obtained by taking half of the product of maximum skull-length,

TABLE 55. Cranial Capacity and Cubic Index

	Cranial capacity c.c.	Cubic index of Manouvrier c.c.
Males:		
Tenerife		
Hooton	—	1529
Verneau	1672	1608
Von Behr	1503	—
Shrubsall	1451	1456
Puccioni	1543	1520
Gomera		
Hooton	—	1481
Verneau	1601	1544
Chil	—	1478
Gran Canaria		
Hooton	—	1541
Verneau (Guayadeque group)	1513	1541
Chil	—	1534
Hierro		
Hooton	—	1404
Verneau	1517–1590	—
Chil	—	1403
Females:		
Tenerife		
Hooton	—	1405
Verneau	1432	1428
Von Behr	1325	—
Shrubsall	1375	—
Puccioni	1344	1431
Gomera		
Hooton	—	1417
Verneau	1349	1411
Chil	—	1349
Gran Canaria		
Hooton	—	1432
Chil	—	1405
Verneau	1412–1539	—
Hierro		
Hooton	—	1399
Verneau	1391–1647	—
Chil	—	1368

maximum breadth, and basion-bregma height, and dividing by 1.14 in the case of male crania and by 1.08 in the case of female crania. The result is said to be accurate within 25 c.c. for small groups. In every case these indices have been calculated from the mean diameters of the group and not from the diameters of the individual crania. It is therefore an index of the means rather than a mean index. Obviously this method disregards deviations in the thickness of the skull-walls and variations in the height and breadth of the frontal bone. Manouvrier gives coefficients for various racial groups and a mean coefficient for general use.[1] The latter has been employed in the present calculations.

A perusal of the table above will make it clear to the reader that in some cases the cubic

[1] L. Manouvrier, Sur l'indice cubique du crâne. C. R. Ass. franc. avanc. sci. Congr. Reims, 1880–1881, p. 869.

index is very close to the cubic capacity as measured by the investigators. On the other hand in some groups there are differences of almost 100 c.c. In the male series the cubic index yields a mean value about 35 c.c. lower than the measured capacities of the same series. In the female series the cubic indices run almost 50 c.c. higher on the average than the capacities.

The measured series of capacities for Tenerife males range from means of 1451 c.c. (Shrubsall) to 1672 c.c. (Verneau). Seven male crania of the Peabody Museum series from San Andres yielded a mean capacity of only 1456 c.c. These differences are partially due to the apparent inclusion, in Shrubsall's series, of an unrepresentatively large number of very small crania and, in Verneau's series, of an excessive number of very large crania. But the discrepancies may be partially due to differences in method of measurement. Von Behr's series, measured with seed, averages 1503 c.c. The cubic index of our series is 1529 c.c. The cubic index of Shrubsall's series is 1456 c.c., which is very close to the measured capacity (1451 c.c.). A comparison of the cubic indices with the cranial capacities for the males of this island leads the present writer to the conclusion that the cubic index of his own series (1529 c.c.) is probably close to the correct figure. The mean capacity of four measured groups is 1542 c.c., and the mean cubic index of four groups (not the same four as the preceding) is 1528 c.c.

In the case of the Gomera males the cubic index of our series is 1481 c.c. while that of the series measured by Chil is 1478 c.c. The series of capacities taken by Verneau averages 1601 c.c., while the cubic index of the same series is 1544 c.c. The crania of the Verneau series were much larger than those of the series measured by Chil and by the present writer. A mean of the cubic indices of the three groups gives 1501 c.c. which is perhaps a good approximation to the average cranial capacity for Gomera males.

Verneau gives mean cranial capacities for various groups of Gran Canaria males ranging from 1513 c.c. to 1568 c.c. For the Guayadeque group the cubic index is 1541 c.c., while the mean capacity is only 1513 c.c. Probably the cubic indices, which range from 1534 to 1541, give a fair idea of the capacity of Gran Canaria males.

The cubic indices for groups of Hierro males, calculated from the data of Chil and those of the present writer, are practically identical, 1403 c.c. and 1404 c.c., respectively. But Verneau gives mean cranial capacities ranging in local groups from 1517 c.c. to 1590 c.c. The inhabitants of these islands were partially small men with small cranial capacities, and partially tall men with large crania. In small series the mean capacities are subject to a large error dependent upon disproportionate representation of one or another element in the population. It is notable that the cranial capacities of Verneau's groups are consistently higher than those of the groups measured by other investigators.

In male crania the cubic indices are generally somewhat less than means of measured capacities. The reverse is true of the females. The mean capacity of Tenerife females, taken by groups, is 1369 c.c., and the mean cubic index of groups is 1421.

Verneau's mean of cranial capacities for Gomera females is 1349 c.c., while the mean of the cubic indices of 3 groups is 1392.

In the case of female crania from Gran Canaria and from Hierro the cubic indices calculated from the series of Chil and from that of the present writer are similar. No general mean can be deduced from the small regional groups measured by Verneau.

In general it is permissible to conclude that male crania from Tenerife and Gran Canaria have, in the mean, somewhat larger capacities than those of average European crania. Gomera crania yield a mean which approximates to the average for European males, and Hierro crania have somewhat smaller capacities. But there is no homogeneity in these island groups. Large crania with large capacities and small crania with low capacities are found in every series.

INTER-INSULAR DIFFERENCES

TABLE 56. MEAN DIFFERENCES OF INDICES

	Tenerife	Gomera	Gran Canaria	Hierro	Sex Difference
Males:					
Tenerife	0	3.44	1.06	1.61	1.20
Gomera	3.44	0	1.92	1.50	1.59
Gran Canaria	1.06	1.92	0	1.34	1.64
Hierro	1.61	1.50	1.34	0	2.35
Females:					
Tenerife	0	1.29	2.56	3.24	1.20
Gomera	1.29	0	1.92	1.50	1.59
Gran Canaria	2.56	1.92	0	3.25	1.64
Hierro	3.24	1.50	3.25	0	2.35

Table 56 gives the mean inter-insular differences of 8 indices: length-breadth, length-height, breadth-height, upper facial, nasal, orbital, external palatal, and alveolar. It also gives the mean sex difference in each island. The differences have been summed without regard to sign. On the basis of this table it may be deduced that anthropometrically the hypothetical average male cranium from Tenerife is most like that of Gran Canaria and least like that of Gomera. The average Gomera male cranium most closely resembles the Hierro cranium and is least like the Tenerife cranium. The average Hierro cranium is most like the average Gran Canaria cranium and least like the Tenerife cranium. The greatest inter-insular differences between males are those obtaining between the average Tenerife and the average Gomera crania, and the least mean indicial difference is that existing between the Tenerife and Gran Canaria average crania.

Though the male cranium of Tenerife is least like that of Gomera, the average indicial deviation of Tenerife females from Gomera females is the smallest inter-insular difference of the sex. Does this indicate that the Gomera type of cranium predominated in the females of Tenerife? This is unlikely in view of the fact that the mean indicial deviation between the sexes is at a minimum in Tenerife. On the other hand it should be remembered that the long Tenerife series furnish by far the most reliable figures for indicial deviations, most

of the cranial series from the other islands being inadequate. Except in the Hierro crania, the mean inter-sex indicial deviations fall well within the range of the mean inter-insular deviations for the respective sexes. The largest inter-sex differences occur in the shortest series and are probably due in part to errors incident to the sampling process.

On the whole the present writer is not inclined to place much confidence in this reckoning of resemblances and differences on the basis of mean indicial deviations. In a later part of the work these indicial deviations will be compared with morphological deviations.

TABLE 57. Differences between Means of Tenerife and Gomera Males

	Tenerife			Gomera			Excess	3×p. e.
	No.	Mean	St. D.	No.	Mean	St. D.		
Glabello-occipital length	247	185.85±0.23	5.35±0.16	34	181.53±0.72	6.25±0.51	*4.32±0.76*	*2.28*
Maximum breadth	249	142.11±0.21	4.95±0.15	34	140.88±0.57	4.90±0.40	1.23±0.61	1.83
Basion-bregma height ..	241	131.89±0.21	4.90±0.15	33	131.93±0.60	5.08±0.42	0.04±0.63	1.89
Maximum circum.....	245	522.13±0.65	15.19±0.46	34	512.12±1.70	14.73±1.20	*10.01±1.82*	*5.46*
Nasion-opisthion arc ...	231	368.89±0.54	12.21±0.38	33	361.79±1.68	14.29±1.19	*7.10±1.77*	*5.31*
Transverse arc	242	304.05±0.41	9.43±0.29	34	302.44±1.10	9.45±0.77	1.61±1.17	3.51
Min. frontal diam.....	252	96.10±0.21	4.92±0.15	34	96.32±0.50	4.36±0.36	0.26±0.54	1.62
Cranial module	237	152.94±0.18	4.13±0.13	33	151.18±0.46	3.90±0.32	*1.76±0.49*	*1.47*
Length-breadth index ...	245	75.99±0.10	2.30±0.07	34	77.66±0.36	3.15±0.26	*1.67±0.37*	*1.11*
Length-height index	239	70.47±0.10	2.40±0.07	33	72.39±0.28	2.42±0.20	*1.92±0.29*	*0.87*
Breadth-height index ...	239	93.52±0.18	4.15±0.13	33	93.55±0.52	4.66±0.39	0.03±0.55	1.65
Bizygomatic diameter..	225	132.18±0.24	5.41±0.17	28	132.57±0.62	4.85±0.44	0.39±0.66	1.98
Nasion-alveon height ..	237	69.66±0.20	4.66±0.35	31	66.26±0.50	4.12±0.35	*3.46±0.54*	*1.62*
Upper facial index	214	52.14±0.15	3.08±0.24	28	49.32±0.34	2.70±0.24	*2.82±0.37*	*1.11*
Nasal height	250	50.84±0.15	3.48±0.10	34	49.35±0.36	3.10±0.25	*1.49±0.39*	*1.17*
Nasal breadth	250	24.14±0.09	1.60±0.05	34	24.29±0.18	1.54±0.12	0.15±0.20	0.60
Nasal index	250	47.46±0.19	4.48±0.14	34	49.09±0.45	3.86±0.32	*1.63±0.49*	*1.47*
Mean orbital index	252	81.42±0.21	4.97±0.15	34	78.09±0.50	4.35±0.36	*3.33±0.54*	*1.62*
External palatal height .	206	53.37±0.14	3.04±0.14	26	53.00±0.47	3.57±0.33	0.37±0.49	1.47
External palatal breadth	207	64.14±0.16	3.45±0.11	26	60.77±0.39	2.93±0.27	*3.37±0.42*	*1.26*
External palatal index ..	206	119.96±0.31	6.65±0.22	26	114.46±0.80	6.04±0.56	*5.50±0.85*	*2.55*
Basion-alveon length ..	233	93.68±0.18	4.20±0.13	31	93.71±0.63	5.24±0.45	0.03±0.65	1.95
Basion-nasion length...	242	100.04±0.17	3.85±0.12	33	99.46±0.46	3.88±0.32	0.58±0.49	1.47
Gnathic Index	233	93.25±0.15	3.42±0.11	31	93.90±0.45	3.74±0.32	0.65±0.47	1.41

An analysis of Table 57 shows that Gomera male crania are strongly differentiated from Tenerife male crania in a majority of measurements and indices. In a total of 24 measurements and indices, differences in excess of three times the probable error of the differences of the means are found in 13 cases. The Gomera crania have much smaller glabello-occipital lengths, the excess amounting to almost six times the probable error of the difference of the means. In the maximum breadth of the cranium the deficiency of the Gomera series amounts to a little more than twice the probable error of the differences of the means and is probably significant. There is no difference between the basion-bregma heights of the two

series. Again, in the maximum circumference and the nasion-opisthion arc, the Gomera series shows deviations on the minus side which cannot be due to the sampling process. The transverse arc has also a smaller mean in the Gomera males, but the deficiency is only a little more than the probable error of the difference and is probably not significant. The minimum frontal diameter of the Gomera series is not markedly or significantly different from that of the Tenerife males. The cranial module is, however, much smaller in the former. Both in length-breadth and in length-height indices there are significant differences. The

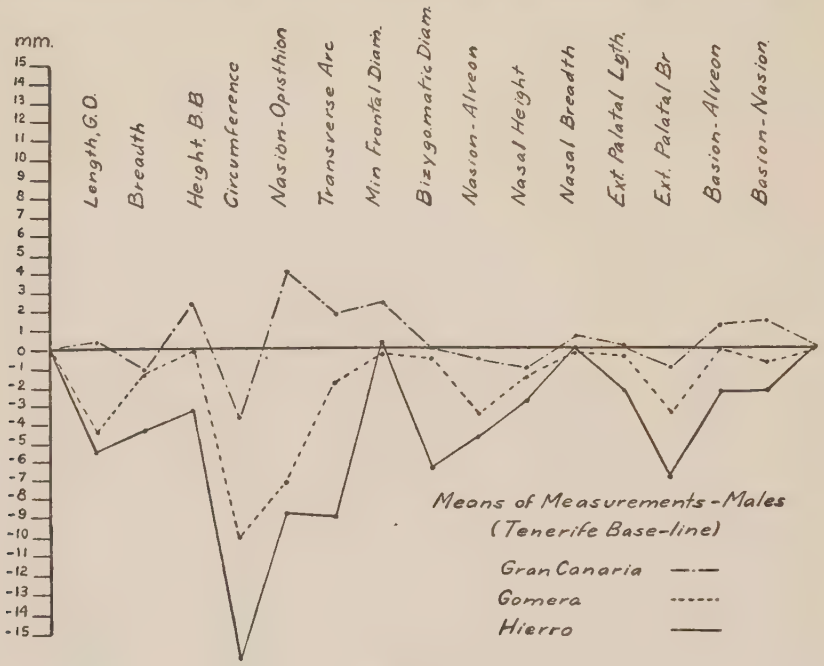


Fig. 12

Gomera series shows excess in both of these indices exceeding three times the probable error. In the case of the breadth-height index no difference between the series is manifested.

The bizygomatic diameters show approximately the same mean in each series. But the upper facial height of the Gomera skulls is much smaller than that of the Tenerife series. The deficiency here is more than six times the probable error of the difference of the means. Naturally the upper facial index shows a similar difference. The faces of Gomera males are broader in comparison to their height than are those of Tenerife. While the nasal breadth is substantially the same in both series, the nasal height is much smaller in the Gomera group and the nasal index is higher. Similarly, the orbits are lower and broader in Gomera and the orbital index is significantly lower than in Tenerife. Palatal lengths in the two groups are approximately equal, but the Gomera males have much narrower palates than those from Tenerife, and the palatal index shows, on the part of the former, a deficiency in excess of six times the probable error. Finally, neither the basion-nasion nor the basion-alveon lengths of the two series are significantly different, nor is there

a difference in the gnathic index which can be assumed to be independent of the causes inherent in the sampling process.

In the differences between the means, frequencies, or other statistical values of random samples, it is to be expected that such differences will be, in 50 per cent of cases, less in value than the probable errors of the differences; in 82 per cent of cases the differences will be less than twice the probable errors, and in 94 per cent, less than three times such values. Differences greater than four times the probable error are expected to appear only seven times in a thousand instances, and differences greater than five times the probable error only seven times in 10,000 instances.[1]

TABLE 58. Number of Times Amount of Deviation in Mean Measure is Observed in Tenerife and Gomera Males

Less than p. e.	1 × p. e. to 2 × p. e.	2 × p. e. to 3 × p. e.	3 × p. e. to 4 × p. e.	4 × p. e. to 5 × p. e.	Greater than 6 × p. e.
7	3	1	5	3	5
Number of Times Amount may be Expected to Occur in Random Samples					
12	8	3.8	.2	0	0

TABLE 59. Differences between Means of Tenerife and Gran Canaria Males

	Tenerife			Gran Canaria			Excess	3 × p. e.
	No.	Mean	St. D.	No.	Mean	St. D.		
Glabello-occipital length	247	185.85±0.25	5.35±0.16	20	186.25±1.05	6.25±0.51	0.40±1.07	3.21
Maximum breadth	249	142.11±0.21	4.95±0.15	20	141.00±0.87	5.76±0.61	1.11±0.89	2.67
Basion-bregma height..	241	131.89±0.21	4.90±0.15	20	134.25±0.95	6.30±0.67	2.44±0.97	2.91
Maximum circum.....	245	522.13±0.65	15.19±0.46	20	518.85±2.59	17.21±1.83	3.58±2.67	8.01
Nasion-opisthion arc...	231	368.89±0.54	12.21±0.38	19	373.05±1.97	12.71±1.36	4.16±2.08	6.24
Transverse arc.....	242	304.05±0.41	9.43±0.29	20	306.25±1.66	10.98±1.17	2.05±1.14	3.42
Min. frontal diam.....	252	96.10±0.21	4.92±0.15	20	98.55±0.85	5.65±0.60	2.45±0.88	2.64
Cranial module.....	237	152.94±0.18	4.13±0.13	20	153.45±0.81	5.38±0.57	0.51±0.83	2.49
Length-breadth index ...	245	75.99±0.10	2.30±0.07	20	75.25±0.39	2.62±0.28	0.79±0.39	1.17
Length-height index	239	70.47±0.10	2.40±0.07	20	71.50±0.48	3.17±0.34	1.03±0.49	1.47
Breadth-height index ...	239	93.52±0.18	4.15±0.13	20	94.85±0.62	4.09±0.44	1.33±0.65	1.95
Bizygomatic diameter..	225	132.18±0.24	5.41±0.17	15	132.07 ..	....	0.08	....
Nasion-alveon height ..	237	69.66±0.20	4.66±0.14	19	69.26 ..	....	0.46	....
Upper facial index.....	214	52.14±0.14	3.08±0.10	15	52.40±0.62	3.12±0.44	0.26±0.64	1.92
Nasal height.....	250	50.84±0.15	3.48±0.10	20	49.80±0.44	2.89±0.31	1.04±0.46	1.38
Nasal breadth.....	250	24.14±0.09	1.60±0.05	20	24.80±0.17	1.16±0.12	*0.66±0.19*	*0.57*
Nasal index.....	250	47.46±0.19	4.48±0.14	20	49.65±0.46	3.09±0.33	*2.19±0.50*	*1.50*
Mean orbital index.....	252	81.42±0.21	4.97±0.15	20	81.15±0.91	6.04±0.64	0.26±0.93	2.79
External palatal length.	206	53.37±0.47	3.04±0.10	14	53.57 ..	....	0.20	....
External palatal breadth	207	64.14±0.16	3.45±0.11	14	63.00 ..	....	1.00	....
External palatal index ..	206	119.96±0.31	6.65±0.22	14	117.57±1.24	6.91±0.88	2.39±1.28	3.84
Basion-alveon length ..	233	93.68±0.18	4.20±0.13	19	94.79±0.80	5.20±0.57	1.11±0.82	2.46
Basion-nasion length...	242	100.04±0.17	3.85±0.12	20	101.45±0.72	4.79±0.51	1.41±0.74	2.28
Gnathic index.....	233	93.25±0.15	3.42±0.11	19	92.95±0.60	3.90±0.43	0.30±0.62	1.86

[1] Charles Goring. The English Convict — A Statistical Study, London, 1913, p. 132.

TABLE 60. Number of Times Amount of Deviation in Mean Measure is Observed in Tenerife and Gran Canaria Males

Less than p. e.	1×p. e. to 2×p. e.	2×p. e. to 3×p. e.	3×p. e. to 4×p. e.	4×p. e. to 5×p. e.	Total
5	6	7	1	1	20
Number of Times Amount may be Expected to Occur in Random Samples					
10	6	3.15	.70	.15	20

The differences between Tenerife and Gran Canaria males are in excess of what we should expect were they due merely to the sampling process, but these differences are not nearly as pronounced as those which distinguish the Tenerife and Gomera males. In but two cases do they exceed three times the probable errors of the differences of the means. These are the nasal breadth and the nasal index. Gran Canaria males have decidedly broader noses and higher nasal indices. Other differences, between the two groups, which are possibly significant are: an excess of basion-bregma height on the part of the Gran Canaria crania, amounting to about two and a half times the probable error of the differences; excesses over the Tenerife means in nasion-opisthion and transverse arcs, amounting to about twice the probable errors; similar excesses amounting to more than twice the probable errors in length-height and breadth-height indices; a deficiency on the part of the Gran Canaria males in nasal height, amounting to more than twice the probable error.

TABLE 61. Differences between Means of Gran Canaria and Gomera Males

	Gran Canaria (*a*)	Gomera (*b*)	Excess (*a*) 3×p. e.
Glabello-occipital length	186.25±1.05	181.25±0.72	*4.72*±1.27 3.81
Breadth maximum	141.00±0.87	140.88±0.57	0.12±1.04 3.12
Basion-bregma height	134.25±0.95	131.93±0.60	2.32±1.12 3.36
Circumference	518.85±2.59	512.12±1.70	6.73±3.09 9.27
Nasion-opisthion arc	373.05±1.97	361.79±1.68	*11.26*±2.60 7.80
Transverse arc	306.25±1.66	302.44±1.10	3.81±1.94 5.72
Minimum frontal diameter	98.55±0.85	96.32±0.50	2.23±0.98 2.94
Cranial module	153.45±0.81	151.18±0.46	2.27±0.93 2.79
Length-breadth index	75.25±0.39	77.66±0.36	*2.41*±0.53 1.59
Length-height index	71.50±0.48	72.39±0.28	0.89±0.55 1.65
Breadth-height index	94.85±0.62	93.55±0.52	1.30±0.81 2.43
Bizygomatic diameter	132.07 ...	132.57±0.62	0.50 .....
Nasion-alveon height	69.26 ...	66.26±0.50	3.00 .....
Upper facial index	52.40±0.62	49.32±0.34	*3.08*±0.71 2.13
Nasal height	49.80±0.44	49.35±0.36	0.45±0.57 1.71
Nasal breadth	24.80±0.17	24.29±0.18	0.51±0.24 0.72
Nasal index	49.65±0.46	49.09±0.45	0.56±0.64 1.92
Mean orbital index	81.15±0.91	78.09±0.50	*3.60*±1.03 3.09
External palatal length	53.57 ...	53.00±0.47	0.57 .....
External palatal breadth	63.00 ...	60.77±0.39	2.23 .....
External palatal index	117.57±1.24	114.46±0.80	*3.11*±1.47 4.41
Basion-alveon length	94.79±0.80	93.71±0.67	1.08±1.04 3.12
Basion-nasion length	101.45±0.72	99.46±0.46	0.99±0.85 2.55
Gnathic index	92.95±0.60	93.60±0.45	0.65±0.74 2.22

We seem to be justified in concluding that the differences between male crania from Gran Canaria and those from Tenerife exceed such as would be expected to be consequent upon the sampling process. The Canaria crania seem to have higher vaults, both absolutely and relative to their heights and breadths. Their noses are both absolutely and relatively broader and shorter.

TABLE 62. NUMBER OF TIMES AMOUNT OF DEVIATION IN MEAN MEASURE IS OBSERVED IN GOMERA AND GRAN CANARIA MALES

Less than p. e.	1 × p. e. to 2 × p. e.	2 × p.e. to 3 × p. e.	3 × p. e. to 4 × p. e.	4 × p. e. to 5 × p. e.	Total
4	5	6	3	2	20
NUMBER OF TIMES AMOUNT MAY BE EXPECTED TO OCCUR IN RANDOM SAMPLES					
10	6	3.15	.70	.15	20

From Tables 61 and 62 it may be observed that Gran Canaria male crania differ in the means of their measurements and indices from the means of the measurements and indices

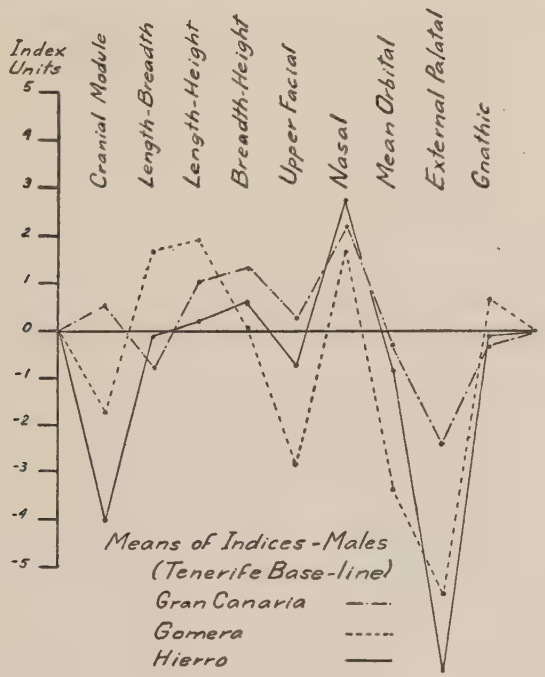


FIG. 13

of male crania from Gomera, to such an extent that the two series cannot be considered random samples drawn from the same universe. These differences are much more pronounced than the differences between the means of measurements and indices of Tenerife and Gran Canaria males, but less pronounced than the differences between Gomera and Tenerife males.

TABLE 63. Comparative Table of Coefficients of Variation

	Tenerife		Gomera	Gran Canaria	Hierro
	Male	Female	Male	Male	Male
Glabello-occipital length	2.88±0.10	2.75±0.14	3.44±0.28	3.74±0.40	2.41±0.32
Maximum breadth	3.48±0.10	2.42±0.13	3.47±0.28	4.08±0.44	3.23±0.43
Basion-bregma height	3.71±0.12	3.25±0.17	3.85±0.32	4.69±0.50	3.28±0.45
Maximum circumference	2.91±0.09	2.56±0.14	2.88±0.24	3.32±0.35	2.30±0.30
Nasion-opisthion arc	3.31±0.10	3.53±0.19	3.95±0.33	3.41±0.37	2.74±0.38
Transverse arc	3.10±0.10	3.03±0.16	3.12±0.26	3.58±0.38	3.07±0.40
Minimum frontal diameter	5.12±0.15	4.42±0.23	4.52±0.37	5.65±0.60	4.39±0.58
Cranial module	2.70±0.08	2.06±0.11	2.57±0.21	3.50±0.37	2.39±0.33
Length-breadth index	3.03±0.09	3.12±0.16	4.08±0.33	3.48±0.37	2.96±0.39
Length-height index	3.40±0.10	3.28±0.17	3.35±0.28	4.43±0.47	2.85±0.39
Breadth-height index	4.43±0.14	3.97±0.21	4.98±0.41	4.31±0.46	3.73±0.51
Bizygomatic diameter	4.09±0.13	3.94±0.22	3.66±0.32	5.32±0.66	4.93±0.68
Alveon-nasion height	6.69±0.21	5.88±0.32	6.20±0.53	5.98±0.65	3.51±0.48
Upper facial index	5.91±0.27	6.35±0.38	5.47±0.49	5.94±0.73	5.70±0.82
Nasal height	6.84±0.21	6.25±0.33	6.28±0.51	5.80±0.62	5.25±0.69
Nasal breadth	6.51±0.20	6.82±0.36	6.33±0.52	4.65±0.50	9.38±1.24
Nasal index	9.43±0.28	7.64±0.41	7.86±0.64	6.22±0.66	10.42±1.38
Mean orbital index	6.10±0.18	5.94±0.28	5.57±0.46	7.45±0.79	5.66±0.75
External length of palate	5.70±0.19	4.89±0.31	6.73±0.63	.....	.....
External breadth of palate	5.37±0.18	4.48±0.29	4.32±0.40	.....	.....
Maxillo-alveolar index	4.68±0.16	4.80±0.31	5.27±0.49	5.87±0.75	.....
Basion-alveon length	4.48±0.14	4.98±0.27	5.60±0.50	5.48±0.60	2.97±0.41
Basion-nasion length	3.85±0.12	3.82±0.20	3.90±0.32	4.71±0.48	5.43±0.75
Gnathic index	3.66±0.11	3.59±0.19	3.98±0.34	4.19±0.46	.....
Mean	4.64 ...	4.31 ...	4.64 ...	4.34 ...	4.33 ...

Table 63 compares the variabilities of Tenerife males and females with the males of Gomera, Gran Canaria, and Hierro. The mean variabilities are substantially similar in all the series listed. The probable errors of the coefficients of variation are naturally somewhat higher in the Gomera, Gran Canaria, and Hierro series because of the small numbers of observations.

The nasal index seems to be more variable in the Tenerife and Hierro male series than in the other groups of crania. Otherwise there are no probably significant differences.

CHAPTER VI

SUMMARY AND DISCUSSION OF OBSERVATIONS

Each cranium of the Canary Islands series was described by the present writer immediately after it had been measured. These observations were recorded on standard blanks devised for the purpose. The raw data of observations on the individual crania are found in the Appendix Tables. In these observations morphological features are recorded with reference to theoretical medium development in male and female European crania. Thus any feature may be absent, submedium, medium, pronounced, or very pronounced in development. Since these morphological features are, for the most part, non-measurable, the analysis of the observational data is of great importance. Such careful recording and analysis of observations upon morphological features have been greatly neglected by anthropologists. The method of recording observations used by the present writer is one devised by Dr. Ales Hrdlička, and in use at the United States National Museum. It has been modified to some extent, for use in the Peabody Museum Laboratory.

By far the most thorough treatment of morphological observations upon living subjects is to to be found in the late Dr. Charles Goring's splendid work, "The English Convict." [1] Goring has developed in a masterly fashion a number of methods of studying the relationship of metrical and morphological features. I have none of the statistical genius of Goring. I can, indeed, hardly lay claim to a minimum statistical competency. I wish, however, to express my gratitude to Professor Pearson, Professor Boas, and other eminent statisticians for the splendid tools which they have invented for the use of anthropologists. I regret that I am not better qualified to employ these methods.

THE CRANIAL VAULT

Table 64 shows the distribution of observations on the frontal region, according to the combinations of breadth, height, and slope. Tabulations for the females of islands other than Tenerife have been omitted, because of insufficient series. For the males in general, the commonest combination is breadth pronounced, height medium, slope medium. This combination occurs in 15 to 31 per cent of males from the various islands. The next commonest combination is that of breadth medium, height medium, slope medium, which occurs in 18 to 25 per cent of males. Next comes breadth pronounced, height pronounced, slope medium — a combination which occurs in almost 10 per cent of Tenerife males and 5 to 6 per cent of Gomera and Gran Canaria males. Next in order is breadth medium, height pronounced, slope medium. Other types occur only sporadically.

[1] Charles Goring. The English Convict, London, 1913.

TABLE 64. Observations on the Frontal Region: Tenerife

Breadth Submedium

		Height Submedium			Height Medium			Height Pronounced		
		Steep	Medium	Receding	Steep	Medium	Receding	Steep	Medium	Receding
Males:										
Tenerife:	Number	0	1	4	2	4	6	0	10	0
	Per cent	0	0.39	1.58	0.79	1.58	2.38	0	3.96	0
Gomera:	Number	0	0	1	1	1	1	0	1	2
	Per cent	0	0	2.94	2.94	2.94	2.94	0	2.94	5.88
Gran Canaria:	Number	0	0	0	0	0	0	0	0	0
	Per cent	0	0	0	0	0	0	0	0	0
Hierro:	Number	0	0	0	0	0	0	0	1	0
	Per cent	0	0	0	0	0	0	0	7.69	0
Females:										
Tenerife:	Number	0	0	0	3	3	0	3	2	0
	Per cent	0	0	0	3.70	3.70	0	3.70	2.46	0

Breadth Medium

		Height Submedium			Height Medium			Height Pronounced		
		Steep	Medium	Receding	Steep	Medium	Receding	Steep	Medium	Receding
Males:										
Tenerife:	Number	2	4	7	10	45	8	7	15	0
	Per cent	0.79	1.58	2.77	3.96	17.85	3.17	2.77	5.95	0
Gomera:	Number	0	1	1	1	7	0	1	2	0
	Per cent	0	2.94	2.94	2.94	20.58	0	2.94	5.88	0
Gran Canaria:	Number	0	0	0	0	5	1	2	2	0
	Per cent	0	0	0	0	25.0	5.0	10.0	10.0	0
Hierro:	Number	0	1	0	1	2	0	0	0	0
	Per cent	0	7.69	0	7.69	15.38	0	0	0	0
Females:										
Tenerife:	Number	3	2	1	12	17	1	3	1	0
	Per cent	3.70	2.46	1.23	14.80	20.97	1.23	4.93	1.23	0

Breadth Pronounced

		Height Submedium			Height Medium			Height Pronounced		
		Steep	Medium	Receding	Steep	Medium	Receding	Steep	Medium	Receding
Males:										
Tenerife:	Number	5	15	5	10	53	10	4	25	0
	Per cent	1.98	5.95	1.98	3.96	21.03	3.96	1.58	9.92	0
Gomera:	Number	0	2	1	1	5	3	0	2	0
	Per cent	0	5.88	2.94	2.94	14.70	8.82	0	5.88	0
Gran Canaria:	Number	0	1	1	1	5	0	1	1	0
	Per cent	0	5.0	5.0	5.0	25.0	0	5.0	5.0	0
Hierro:	Number	0	1	1	1	4	1	0	0	0
	Per cent	0	7.69	7.69	7.69	30.77	7.69	0	0	0
Females:										
Tenerife:	Number	3	3	1	12	7	0	1	2	0
	Per cent	3.70	3.70	1.23	14.80	8.63	0	1.23	2.46	0

The Tenerife females differ from the males in exhibiting more frontals with straight or steep slope, and fewer with a pronounced slope or with receding frontal. The commonest combination in these females is breadth medium, height medium, slope medium, which oc-

curs in about 21 per cent. Next in order are breadth medium, height medium, slope steep; and breadth pronounced, height medium, slope steep; both of which combinations occur in 14.8 per cent. High frontals occur in fewer females than males.

Scantiness of numbers in the series from the islands other than Tenerife renders unsafe any attempt to distinguish differences between the various islands. In general there seems to be a fairly close similarity in the distribution of types. Low foreheads, narrow foreheads, and receding foreheads seem somewhat more common in Gomera than in Tenerife. Broad foreheads are commoner and narrow foreheads rarer, in Hierro and Gran Canaria than in Tenerife and Gomera — a deduction which is confirmed by the measurement of the minimum frontal diameter.

TABLE 65. Metopic Suture

	Tenerife	Gomera	Gran Canaria	Hierro	Total Crania
Males:					
Number	26	1	1	0	319
Per cent	10.31	2.94	5.0	0	8.74
Females:					
Number	6	1	0	1	106
Per cent	7.40	8.33	0	16.6	7.55

The metopic suture occurs in Tenerife crania with a frequency equalled only in European crania. Verneau states that he found it in 12 per cent of males and 14 per cent of females. Shrubsall found it in 8 per cent of his second Tenerife series. In the other islands it is apparently less common.

In place of the metopic suture a median frontal elevation occurs in 51, or 20.2 per cent, of Tenerife male crania, and in 8, or 9.9 per cent, of female crania. This feature is rare in the crania of the other islands except in the females of Gomera, where 3 of 12 crania exhibited a median frontal crest.

TABLE 66. Supraorbital Ridges

	Absent Per cent	Submedium Per cent	Medium Per cent	Large Per cent	Very large Per cent	Total Crania Number
Males:						
Tenerife	2.77	21.82	52.34	19.04	3.96	252
Gomera	5.88	20.58	44.11	26.46	2.94	34
Gran Canaria	15.00	25.00	25.00	35.00	0	20
Hierro	7.69	46.15	38.46	7.69	0	13
Females:						
Tenerife	40.74	7.40	43.21	8.64	0	81
Gomera	33.33	8.33	33.33	25.00	0	12

A perusal of the table above shows that the division of supraorbital ridges into groups according to the extent of development, makes a very symmetrical arrangement in Tenerife and Gomera, as regards the males. A medium development predominates. Only 4 of 252 male crania from Tenerife exhibit the torus type of supraorbital ridges. The females show the usual sex difference in this feature.

TABLE 67. Observations on the Sagittal Region: Tenerife

	Total		Postcoronoid Depression					
			Absent		Submedium		Medium	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Tenerife males:								
Sagittal sulcus								
Breadth submedium	0	0	0	0	0	0	0	0
Breadth medium	2	0.80	2	0.80	0	0	0	0
Breadth pronounced	9	3.58	9	3.58	0	0	0	0
No median elevation								
Breadth submedium	5	1.95	3	1.20	0	0	2	0.80
Breadth medium	65	25.89	57	22.74	3	1.20	5	1.95
Breadth pronounced	116	46.21	76	30.23	14	5.57	26	10.35
Slight or medium median elevation								
Breadth submedium	0	0	0	0	0	0	0	0
Breadth medium	13	5.17	12	4.78	1	0.40	0	0
Breadth pronounced	40	15.93	37	14.74	1	0.40	2	0.80
Pronounced median elevation								
Breadth medium	1	0.40	0	0	1	0.40	0	0
	251	99.93	196	78.07	20	7.97	35	13.90
Tenerife females:								
Sagittal sulcus								
Breadth submedium	0	0	0	0	0	0	0	0
Breadth medium	1	1.23	1	1.23	0	0	0	0
Breadth pronounced	6	7.41	6	7.41	0	0	0	0
No median elevation								
Breadth submedium	0	0	0	0	0	0	0	0
Breadth medium	24	29.63	19	23.46	1	1.23	4	4.94
Breadth pronounced	37	45.68	26	32.10	1	1.23	10	12.35
Slight or medium median elevation								
Breadth submedium	0	0	0	0	0	0	0	0
Breadth medium	3	3.70	2	2.47	1	1.23	0	0
Breadth pronounced	10	12.35	8	9.88	2	2.46	0	0
	81	100.00	62	76.55	5	6.15	14	17.29

The table above indicates the distribution and association of certain features of the sagittal region of the cranial vault, for Tenerife male and female crania. These features are: presence or absence of a sagittal sulcus or elevation, presence or absence and degree of development of the postcoronoid depression or sulcus, and breadth of the cranium across the parietal bosses. The sex distributions for these characters are remarkably similar. The most frequent association of features is a lack of sagittal elevation or crest, pronounced breadth across parietals, and no postcoronoid depression. This combination occurs in 30.23 per cent of males and 32.10 per cent of females. The next type in order of frequency differs from the preceding only in that the parietal breadth is judged to be medium. This type occurs in 22.74 per cent of males and in 23.46 per cent of females. Next in order is a type in which there is no median elevation, breadth is pronounced, and there is a medium postcoronoid depression. This type occurs in 10.35 per cent of males and in 12.35 per cent of females. A type in which there is a slight or medium sagittal elevation, pronounced breadth, and no postcoronoid sulcus occurs in 14.74 per cent of males and in 9.88 per cent

of females. The combination of a depressed sagittal region, pronounced breadth, and no postcoronoid depression occurs in 3.58 per cent of males and in 7.41 per cent of females.

The sagittal sulcus occurs in 4.38 per cent of male crania and in 8.64 per cent of female crania. Verneau commented upon this as an occasional feature. The sagittal crest occurs in 21.50 per cent of male crania and in 16.05 per cent of female crania. A postcoronoid depression occurs in 22.87 per cent of males and in 23.44 per cent of females. Verneau found this depression in 30–32 per cent of Tenerife crania.

The sagittal sulcus is not found in association with the postcoronoid depression, nor is the postcoronoid depression found in association with a sagittal crest except in rare instances.

TABLE 68. Observations on Sagittal Region: all Canaries

	Sagittal Crest Absent						Sagittal Crest Present					
	Breadth Submedium		Breadth Medium		Breadth Pronounced		Breadth Submedium		Breadth Medium		Breadth Pronounced	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:												
Tenerife	5	1.95	67	26.69	125	49.79	0	0	14	5.47	40	15.93
Gomera	2	5.88	11	32.35	14	41.17	0	0	3	8.82	4	11.76
Gran Canaria	1	5.00	6	30.00	6	30.00	0	0	4	20.00	3	15.00
Hierro	0	0	7	53.85	5	38.46	0	0	1	7.69	0	0
Females:												
Tenerife	0	0	25	30.86	43	53.09	0	0	3	3.70	10	12.35
Gomera	0	0	4	33.33	7	58.33	0	0	0	0	1	8.33
Gran Canaria	0	0	4	..	2	..	0	0	0	0	0	0
Hierro	0	0	6	..	0	..	0	0	1	..	0	0

The tabulations of the percentages of female crania from Hierro and Gran Canaria have been omitted in Table 68 and in subsequent tables because of inadequate numbers. No striking differences between the various islands are manifested in this table.

The postcoronoid depression appears less frequently in the remainder of the islands than in Tenerife. In the latter it occurs in almost 23 per cent of male crania, in Gomera in 3 crania or 8.82 per cent, in Gran Canaria in one cranium or 5 per cent, and in Hierro in one cranium or 7.69 per cent. Verneau, however, says that he found a postcoronoid depression in 34.61 per cent of Gomera crania.

TABLE 69. Observations on Temporal Region

	Compressed		Medium		Protuberant	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	60	23.81	127	50.39	65	25.79
Gomera	10	29.41	19	55.88	5	14.70
Gran Canaria	8	40.00	6	30.00	6	30.00
Hierro	0	0	9	69.23	4	30.77
Females:						
Tenerife	22	27.50	34	42.50	24	30.00
Gomera	2	16.66	5	41.66	5	41.66
Gran Canaria	2	..	3	..	2	..
Hierro	3	..	1	..	2	..

TABLE 70. Size of Mastoids

	Small		Medium		Large		Very Large	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:								
Tenerife	25	9.92	96	38.09	102	40.47	29	11.51
Gomera	12	35.29	14	41.17	8	23.52	0	0
Gran Canaria	5	25.00	7	35.00	7	35.00	1	5.00
Hierro	4	30.77	7	53.85	0	0	2	15.38
Females:								
Tenerife	25	31.25	30	37.50	25	31.25	0	0
Gomera	5	41.66	4	33.33	3	25.00	0	0
Gran Canaria	0	0	4	..	2	..	0	0
Hierro	1	..	3	..	3	..	0	0

The temporal regions of these crania are prevailingly of medium fullness, but often flat or compressed, or protuberant. No significant inter-insular differences can be deduced from the tables above.

Mastoid processes in males are prevailingly of average size or larger. The Tenerife series of males shows the smallest proportion of small mastoid processes. The mastoids of Gomera males are significantly smaller. The usual sex differences obtain.

TABLE 71. Observations on the Occipital Region

	Total	Flat or Steep		Medium Convex		Protuberant	
	No.	No.	Per cent	No.	Per cent	No.	Per cent
Males:							
Tenerife	250	21	8.40	144	57.60	85	34.00
Gomera	34	8	23.52	20	58.82	6	17.64
Gran Canaria	20	1	5.00	11	55.00	8	40.00
Hierro	13	1	7.69	9	69.23	3	23.08
Females:							
Tenerife	81	6	7.41	50	61.73	25	30.86
Gomera	12	2	16.66	5	41.66	5	41.66
Gran Canaria	6	1	..	3	..	2	..
Hierro	7	0	0	5	..	2	..

A moderate convexity characterizes the occipital regions of the majority of crania of these series. But a very considerable proportion of crania have protuberant occiputs. The largest proportion of flat or steep occiputs is found in Gomera, where the brachycephalic element is greatest. In the Gomera males the proportion of flat occiputs rises to 23.5 per cent, while the percentage of brachycephals is 20.6. The percentage of Gomera males with protuberant occiputs is 17.6, which is precisely the percentage of dolichocephals. The correlation of occipital form with length-breadth and length-height index will be discussed in a later portion of this work. A flattened lambdoid region is a common feature of Tenerife crania. This feature has been noted also by Verneau and by Shrubsall.

A very prominent external occipital protuberance was observed in 16, or 6.4 per cent, of Tenerife male crania. This occurred in 6, or 17.64 per cent, of male crania from Gomera, but was not observed in the crania from Gran Canaria or Hierro. An occipital torus was noted in 7, or 2.8 per cent, of Tenerife male crania.

SUTURES; PARIETAL FORAMINA

TABLE 72. SERRATION

	Simple		Medium		Complex		Very Complex	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:								
Tenerife	20	7.93	117	46.42	100	39.68	15	5.95
Gomera	9	27.27	22	66.67	2	6.06	0	0
Gran Canaria	4	20.00	11	55.00	5	25.00	0	0
Hierro	2	15.38	5	38.46	6	46.15	0	0
Females:								
Tenerife	4	5.06	23	29.11	45	56.96	7	8.86
Gomera	2	16.66	7	58.33	3	25.00	0	0
Gran Canaria	0	0	6	..	0	0	0	0
Hierro	0	0	6	..	1	..	0	0

The Tenerife crania show a high percentage of very complicated cranial sutures. In this respect the female crania exceed the males. Crania from Gomera show much higher proportions of simple sutures and of those of medium complexity. The series from the other islands are too small to be significant in these classifications, but they seem to indicate fewer intricate serrations than those in Tenerife and more than those in Gomera.

Verneau states that complicated sutures are almost invariable in Tenerife crania, and that it is only exceptionally that one encounters sagittal and coronal sutures that are relatively simple. He also says that the cranial sutures of Gomera skulls are less complicated than those of Tenerife crania, which is in agreement with the results tabulated above.

The correlation ratio of serration of sutures with island type for male crania is .308. This measures the extent to which the series from the several islands are differentiated in regard to sutural complexity, and particularly the extent to which Tenerife males show greater proportions of complicated sutures and fewer simple sutures.

In Table 73, Tenerife crania are classified according to the degree of external obliteration in the coronal, sagittal, and lambdoid sutures. The term " beginning " must be taken to include a moderate degree of occlusion. The term " obliterated " includes not only completely obliterated sutures but also those which are almost obliterated externally. This extensive classification has been tabulated for the islands other than Tenerife, but the inadequacy of the series makes it inadvisable to publish it.

It may be noted that 31 per cent of Tenerife males and 32 per cent of Tenerife females show no external obliteration of sutures and are presumably, for the most part, young adults. In the Gomera series 7 crania, or 32.35 per cent of all males, have open sutures, and 6, or 50 per cent of the females, show no external obliteration. In the series from Gran Canaria 7, or 35 per cent, of males, and 2, or 33 per cent, of females, show open sutures. In the Hierro series 2 of 14 males, or 14.29 per cent, show no obliteration, and 2 of 7 females, or 28.57 per cent.

The largest percentage groups in the Tenerife male series are: that in which obliteration is beginning in the coronal and sagittal sutures while the lambdoid remains open, and that

TABLE 73. Occlusion of Sutures

	Tenerife				Gomera	
	Males		Females		Males	
	No.	Per cent	No.	Per cent	No.	Per cent
Coronal open Sagittal open Lambdoid open	79	31.38	26	32.08	11	32.35
Coronal open Sagittal beginning Lambdoid open	9	3.57	1	1.23	1	2.94
Coronal open Sagittal beginning Lambdoid beginning	4	1.58	1	1.23	0	0
Coronal open Sagittal obliterated Lambdoid open	4	1.58	0	0	1	2.94
Coronal beginning Sagittal open Lambdoid open	3	1.19	5	6.17	0	0
Coronal beginning Sagittal beginning Lambdoid open	38	15.07	4	4.94	1	2.94
Coronal beginning Sagittal obliterated Lambdoid open	6	2.38	2	2.47	0	0
Coronal beginning Sagittal obliterated Lambdoid beginning	29	11.50	0	0	2	5.88
Coronal beginning Sagittal obliterated Lambdoid obliterated	2	0.79	2	2.47	0	0
Coronal obliterated Sagittal beginning Lambdoid open	0	0	3	3.70	1	2.94
Coronal obliterated Sagittal obliterated Lambdoid open	6	2.38	7	8.64	3	8.82
Coronal obliterated Sagittal obliterated Lambdoid beginning	15	5.95	15	18.51	5	14.70
Coronal obliterated Sagittal obliterated Lambdoid obliterated	13	5.15	6	7.40	6	17.64
Coronal beginning Sagittal beginning Lambdoid beginning	38	15.07	7	8.64	2	5.88
Coronal open Sagittal open Lambdoid beginning	1	0.39	0	0	0	0
Coronal obliterated Sagittal beginning Lambdoid beginning	5	1.98	1	1.23	1	2.94
Coronal beginning Sagittal open Lambdoid beginning	0	0	1	1.23	0	0
Total	252	99.96	81	99.94	34	99.97

in which obliteration has begun in all three of the sutures. Each of these groups comprises 15 per cent of the total male series. A group in which the coronal and lambdoid are beginning to show obliteration, while obliteration is well along in the sagittal, includes 11.5 per cent of the Tenerife males, but no females at all. The other types comprise few examples.

A study of the foregoing table leads one to the conclusion that the sequence of sutural obliteration in Tenerife males is sagittal, then coronal, then lambdoid. Only 3 crania, or 1.19 per cent of the males, show obliteration beginning in the coronal suture only. It is true that only 9 crania (3.57 per cent) show obliteration beginning in the sagittal only. The following scheme will perhaps clarify the matter.

TABLE 74. Types of Sutural Occlusion in Tenerife Male Crania

	1. Coronal open Sagittal open Lambdoid open — 79 (31.38 %)		
2a. Coronal open Sagittal obliterated Lambdoid open — 4 (1.58 %)	2. Coronal open Sagittal beginning Lambdoid open — 9 (3.57 %)	2b. Coronal beginning Sagittal open Lambdoid open — 3 (1.19 %)	
	3. Coronal beginning Sagittal beginning Lambdoid open — 38 (15.07 %)	3a. Coronal obliterated Sagittal beginning Lambdoid beginning — 5 (1.98 %)	
	4. Coronal beginning Sagittal beginning Lambdoid beginning — 38 (15.07 %)		
	5. Coronal beginning Sagittal obliterated Lambdoid beginning — 29 (11.50 %)		
6a. Coronal obliterated Sagittal obliterated Lambdoid open — 6 (2.38 %)	6. Coronal obliterated Sagittal obliterated Lambdoid beginning — 15 (5.95 %)		
	7. Coronal obliterated Sagittal obliterated Lambdoid obliterated — 13 (5.15 %)		

The bulk of the series (51.6 per cent), is included in the above sagittal, coronal, lambdoid sequence group of five stages (2–6 inclusive). This leaves 31.4 per cent of crania with unobliterated sutures, 5.15 per cent with completely obliterated sutures, and 12.31 per cent of anomalous sequences. It is apparent that the coronal begins to close very soon after the sagittal and that the lambdoid is a bad third. Certain sagittal precedence is exhibited in 3 occlusional types aggregating 16.55 per cent, certain coronal precedence in 2 types comprising 3.17 per cent, certain lambdoid precedence in one case (0.39 per cent). The rest of the types indicate no specific precedence. The Gomera male data agree substantially with the Tenerife male distribution, although the Gomera series contains more aged individuals. The Tenerife females seem to show a dominance of the coronal-sagittal-lambdoid sequence. Coronal precedence is shown in 11.10 per cent of cases, sagittal precedence in

3.70 cases, and lambdoid precedence not at all. Curiously enough the same sex difference in order of sutural occlusion was observed by the present writer in a study of prehistoric Indian crania from Madisonville, Ohio.[1]

Obliteration usually begins in the sagittal suture near obelion, and in the coronal suture under the temporal crest near the pterion region.

Both Verneau and Shrubsall say that obliteration of sutures begins in Tenerife males in the sagittal, and then proceeds in the external parts of the coronal. Verneau states that the same order obtains in females, but with this the present writer is unable to agree.

Form of pterion. The pterion in Tenerife males and females is almost invariably of the broad H form. But in 242 male crania one X form occurs, and only 6 male crania (2.48 per cent) and one female cranium (1.23 per cent) have the inverted H form with the fronto-squamous articulation. In the Gomera series the inverted H or *pterion retourné* seems to be more common, for it occurs in 2 male crania (5.88 per cent) and in one female cranium (8. 33 per cent). In the Gran Canaria and Hierro series the pterions are of the H form without exception.

TABLE 75. Wormian Bones

	Lambdoid		Squamous		Temporo-occipital		Epipteric		Inca	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:										
Tenerife	188	74.60	60	23.80	11	4.36	58	23.01	6	2.38
Gomera	19	55.88	2	5.88	0	0	4	11.76	1	2.94
Gran Canaria	14	70.00	4	20.00	1	5.00	4	20.00	0	0
Hierro	4	30.77	2	15.38	1	7.69	5	38.46	0	0
Females:										
Tenerife	54	66.67	10	12.35	4	4.94	19	23.46	0	0
Gomera	7	58.33	4	33.33	0	0	1	8.33	0	0
Gran Canaria	4	66.67	2	33.33	0	0	0	0	0	0
Hierro	3	42.86	3	42.86	0	0	2	28.57	0	0

Wormian bones in the sutures are extremely common in the crania from these islands. They are most frequent in the lambdoid suture, and occur here in 74.6 per cent of all Tenerife male crania. They occur with approximately equal frequency (23–24 per cent) in the squamous suture and at pterion. In the series of males from Tenerife there were observed 6 so-called " Inca bones," or 2.38 per cent of all cases. Two bregmatic bones occurred (0.79 per cent), 3 sagittal bones (1.19 per cent), and one coronal bone. One sagittal bone was found in the female series from Tenerife (1.23 per cent).

Wormian bones seem to occur most frequently in the Tenerife and Gran Canaria crania, and much less frequently in the crania from Gomera and Hierro. They are more frequent in the male crania than in the female crania of Tenerife and of Gran Canaria.

[1] E. A. Hooton and C. C. Willoughby, Indian Village Site and Cemetery near Madisonville, Ohio. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, Cambridge, Mass., 1920, vol. VIII, no. 1, p. 101.

Verneau found Wormian bones in the lambdoid suture of 72 per cent of his Tenerife male crania and 43 per cent of female crania. This may be compared with our figures of 74.6 per cent and 66.6 per cent respectively. He also records [1] an abundant occurrence of these intercalary bones in the other situations in which they are recorded in the table above. Shrubsall says [2] "Wormian bones are the rule in the lambdoid suture." For the other islands no comparative data are given by Verneau.

TABLE 76. Number and Size of Parietal Foramina

	Tenerife		Gomera		Gran Canaria		Hierro	
	Male	Female	Male	Female	Male	Female	Male	Female
Total crania	252	81	34	12	20	6	13	7
None								
Number	76	24	12	2	7	1	4	1
Per cent	30.16	29.61	35.29	16.66	35.00	..	30.77	..
One small								
Number	56	16	6	3	6	3	4	3
Per cent	22.22	19.74	17.64	25.00	30.00	..	30.77	..
One medium								
Number	26	6	1	0	3	1	1	0
Per cent	10.31	7.40	2.94	0	15.00	..	7.69	0
Two small								
Number	65	26	9	6	2	1	1	1
Per cent	25.79	32.08	26.46	50.00	10.00	..	7.69	..
Two medium								
Number	16	3	3	1	2	0	3	2
Per cent	6.34	3.70	8.82	8.33	10.00	..	23.08	..
Two large								
Number	1	0	0	0	0	0	0	0
Per cent	0.39	0	0	0	0	0	0	0
One large One small								
Number	4	1	1	0	0	0	0	0
Per cent	1.58	1.23	2.94	0	0	0	0	0
Three small								
Number	4	0	0	0	0	0	0	0
Per cent	1.58	0.47	0	0	0	0	0	0
One large								
Number	1	2	1	0	0	0	0	0
Per cent	0.39	2.47	2.94	0	0	0	0	0
Doubtful								
Number	3	3	1	0	0	0	0	0
Per cent	1.19	3.70	2.94	0	0	0	0	0

Parietal foramina are lacking in about one-third of the male crania of all the Canary Islands series. The Tenerife females approximate to this proportion, and the female series of the other islands are almost too small for consideration. One small foramen or two small foramina are found in the largest number of Tenerife and Gomera crania, two being the commonest number. Other combinations of number and size are less frequent and no significant interinsular differences are apparent.

[1] Op. cit., p. 618.

[2] Op. cit., p. 160.

NOSE

TABLE 77. Nasion Depression

	Absent		Slight		Medium		Pronounced	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:								
Tenerife	14	5.57	66	26.29	118	47.01	53	21.11
Gomera	3	8.82	4	11.76	21	61.76	6	17.64
Gran Canaria	9	45.00	3	15.00	7	35.00	1	5.00
Hierro	2	15.38	8	61.54	3	23.08	0	0
Females:								
Tenerife	39	48.15	14	17.28	18	22.22	10	12.35
Gomera	7	58.33	1	8.33	4	33.33	0	0
Gran Canaria	6	..	0	0	0	0	0	0
Hierro	6	..	0	0	0	0	0	0

TABLE 78. Height and Breadth of Nasal Bridge (Percentages)

	Tenerife		Gomera		Gran Canaria		Hierro	
Type	252 ♂	81 ♀	34 ♂	12 ♀	20 ♂	6 ♀	13 ♂	7 ♀
1. Narrow Low	2.38	2.47	0	0	0	33.33	0	0
2. Narrow Medium height	0.39	2.47	5.88	0	0	0	0	0
3. Narrow High	39.28	17.27	11.76	0	10.0	0	23.08	14.29
4. Medium breadth Low	0.39	4.94	0	0	5.0	0	0	0
5. Medium breadth Medium height	38.49	33.33	50.0	83.33	50.0	50.0	38.46	14.29
6. Medium breadth High	2.38	1.23	0	0	20.0	0	0	0
7. Broad Low	3.57	18.51	8.82	8.33	0	16.67	23.08	42.86
8. Broad Medium height	6.34	13.57	17.64	0	0	0	7.69	28.57
9. Broad High	3.17	6.17	2.94	8.33	10.0	0	7.69	0
10. Broken	3.57	0	2.94	0	5.0	0	0	0

TABLE 79. Breadth of Nasal Aperture

	Narrow		Medium		Broad	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	81	32.23	111	44.22	59	23.50
Gomera	4	11.76	19	55.88	11	32.35
Gran Canaria	0	0	19	95.00	1	5.00
Hierro	1	7.69	6	46.15	46	46.15
Females:						
Tenerife	14	17.27	27	33.33	40	49.39
Gomera	0	0	7	51.33	5	41.66
Gran Canaria	0	0	6	100.00	0	0.14
Hierro	1	14.29	2	28.57	4	57.14

TABLE 80. Lower Borders of Nasal Aperture

	Total Crania	Sharp	Medium	Dull	Subnasal Grooves		
					Slight	Medium	Pronounced
	No.	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Males:							
Tenerife	249	61.84	3.61	34.53	10.44	0.40	4.41
Gomera	34	61.76	11.76	26.46	8.82	0	0
Gran Canaria	20	50.00	10.00	40.00	15.00	0	0
Hierro	13	46.15	0	46.15 [1]	0	0	7.69
Females:							
Tenerife	81	61.72	0	37.04	7.40	0	0
Gomera	12	66.66	8.33	16.66 [1]	8.33	0	0
Gran Canaria	6	33.33	50.00	16.67	0	0	0
Hierro	7	14.29	0	85.71	14.29	14.29	0

[1] Excluding one specimen in which the lower border is entirely absent.

The four preceding tables summarize the observations upon the nasal region. From Table 77, dealing with the nasion depression, it may be observed that this feature is seldom absent from Tenerife male crania (5.57 per cent), and that it presents a medium development in almost half the series (47.01 per cent), while the slight and pronounced developments are 26.29 per cent and 21.11 per cent respectively. The Gomera males show a larger percentage of medium development and smaller percentages of the pronounced and slight types. Apparently the nasion depression is more frequently absent in Gran Canaria and Hierro, but the series from these islands are small. In the female series the nasion depression is prevailingly absent, rarely pronounced. Both males and females from Tenerife show marked development of the nasion depression more frequently than do the crania from the other islands. The mean square contingency coefficient of development of the nasion depression with island type in male crania is .114.

Table 78 deals with the height and breadth of the nasal bridge. The types of maximum frequency in the Tenerife male series are: (*a*) medium height and medium breadth (38.49 per cent); and (*b*) narrow and high (39.28 per cent). In the males from the other islands the narrow and high type is much less common, while the medium type and the broad and low type occur more frequently. The females of all the islands show a greater frequency of broad and low nasal bridges, but the high and narrow nasal bridge occurs among the Tenerife females much oftener than in the other islands.

Table 79 shows the breadth of nasal aperture, based on observations independent of the measurements. Here again Tenerife males show the largest number of narrow nasal apertures while the crania from Hierro show the highest percentages of broad apertures. Females usually exhibit a higher proportion of broad nasal apertures than males.

Table 80 deals with the lower borders of the nasal aperture. It is well known to anthropologists that primitive and infantile nasal apertures usually exhibit dull, ill-defined lower borders, while in certain anthropoid forms occasionally found there is no border at all defining the edge of the nasal floor and separating it anteriorly from the alveolar clivus. On the other hand the more highly evolved types of noses have the lower borders of the

nasal aperture more or less sharply defined. In conjunction with this sharp lower border the anterior nasal spine is well developed, and associated with the ill-defined anterior borders are usually small nasal spines. An entire lack of lower borders to the nasal aperture is commonly associated with a very rudimentary anterior nasal spine.

Sharp lower borders of the nasal aperture are found in almost 62 per cent of Tenerife males and a practically identical proportion of females. In Gomera the relative proportions for the two sexes are substantially the same as in Tenerife. In Gran Canaria the percentage of male crania exhibiting sharp lower borders falls to 50 per cent, and in Hierro to 46 per cent. Similarly in the female series from these islands the scanty numbers seem to indicate much smaller proportions of crania with sharp lower borders of the nasal aperture. A small or rudimentary anterior nasal spine occurs in only 9 male crania (3.6 per cent), and in 5 female crania (6.17 per cent) of the Tenerife series.

With the more primitive types of nasal aperture are often associated subnasal grooves. Table 80 indicates also the percentage and development of this feature. Slight subnasal grooves are fairly common in the crania from all of the islands, but pronounced subnasal grooves are rare.

In general it may be said that the crania from this archipelago show very advanced nasal evolution. High and narrow noses with sharp lower borders, narrow apertures, and well developed anterior spines, are most frequently met with in the Tenerife male series.

ORBITS

TABLE 81. Height of Orbits

	Low		Medium		High	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	97	38.49	82	32.53	73	28.97
Gomera	18	52.94	10	29.41	6	17.64
Gran Canaria	5	25.00	12	60.00	3	15.00
Hierro	6	46.15	5	38.46	2	15.38
Females:						
Tenerife	25	30.85	33	40.74	23	28.40
Gomera	2	16.66	7	58.33	3	25.00
Gran Canaria	0	0	5	..	1	..
Hierro	0	0	4	..	3	..

TABLE 82. Infraorbital Suture

	Absent		Complete on one side		Complete on both sides	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	128	50.79	41	16.28	83	32.93
Gomera	23	67.64	5	14.70	5	14.70
Gran Canaria	14	70.00	4	20.00	2	10.00
Hierro	9	69.23	2	15.38	2	15.38
Females:						
Tenerife	46	56.78	13	16.04	23	28.38
Gomera	8	66.66	2	16.66	2	16.66
Gran Canaria	5	83.33	0	0	2	20.00
Hierro	5	71.43	0	0	2	28.57

TABLE 83. Suborbital Fossae

	?		Absent		Shallow		Medium		Deep	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:										
Tenerife	35	13.88	3	1.19	43	17.06	125	49.60	46	18.75
Gomera	5	14.70	0	0	6	17.64	14	41.17	9	26.46
Gran Canaria	1	5.00	0	0	6	30.00	10	50.00	3	15.00
Hierro	5	38.46	0	0	5	38.46	2	15.38	1	7.69
Females:										
Tenerife	22	27.14	0	0	15	18.51	39	35.80	15	18.51
Gomera	2	16.67	0	0	1	8.33	8	66.66	1	8.33
Gran Canaria	1	16.67	0	0	1	16.67	4	66.67	0	0
Hierro	2	28.57	0	0	2	28.57	2	28.57	1	14.29

The infraorbital suture, which is common in Eskimo and in Europeans and somewhat less common among other non-European races, occurs either on one side or on both sides in almost half of the Tenerife crania. It is apparently much less common in the crania from the other islands of the group.

The suborbital (canine) fossa is absent in the anthropoid apes and in Neanderthal man, very shallow in many Mongoloid races, but deep in certain European and Negroid races. It cannot be observed accurately in aged crania in which many teeth have been lost and the alveolar processes absorbed, because such loss and absorption is usually accompanied by a deflation of the maxillary sinus, which brings about an increase in the depth and extent of the suborbital fossa. Table 83 records the depth of this fossa as observed in Canary Island crania. Shallow fossae seem most common in crania from Gran Canaria and Hierro, but the series from these islands are very small.

MALARS AND ZYGOMATA, ALVEOLAR PROGNATHISM

TABLE 84. Size of Malars

	Small		Medium		Large		Very Large	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:								
Tenerife	48	19.12	108	43.02	56	22.31	39	15.53
Gomera	6	18.18	16	48.48	8	24.24	3	9.09
Gran Canaria	5	25.00	7	35.00	2	10.00	5	25.00
Hierro	1	8.33	5	41.67	2	16.67	4	33.33
Females:								
Tenerife	26	32.08	41	50.61	13	16.04	1	1.23
Gomera	2	18.18	5	45.45	3	27.27	1	9.09
Gran Canaria	1	..	4	..	1	..	0	0
Hierro	1	6	3	..	2	..	0	0

As is to be expected in the case of primitive people living on relatively coarse diet, the skeletal parts concerned in the masticatory function are well developed. Malars and zygomata are prevailingly medium but frequently large. The development of such parts constitutes one of the few features whereby these crania belonging to the ancient inhabitants of the Canary Islands may be distinguished from those of modern Europeans. No particular inter-insular differences are ascertainable.

TABLE 85. Size of Zygomata

	Small		Medium		Large		Very Large	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:								
Tenerife	46	18.54	99	39.91	49	19.76	54	21.77
Gomera	6	18.18	16	48.48	8	24.24	3	8.82
Gran Canaria	6	30.00	7	35.00	2	10.00	5	25.00
Hierro	1	8.33	5	41.67	2	16.67	4	33.33
Females:								
Tenerife	25	31.25	41	51.25	13	16.25	1	1.25
Gomera	1	9.09	5	45.45	4	36.36	1	9.09
Gran Canaria	1	..	4	..	1	..	0	0
Hierro	1	..	2	..	2	..	1	..

TABLE 86. Alveolar Prognathism

	?		Absent		Slight		Medium		Pronounced	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:										
Tenerife	49	19.44	15	5.95	55	21.82	97	38.49	45	17.85
Gomera	8	23.52	0	0	10	29.41	12	35.29	4	11.76
Gran Canaria	3	15.00	0	0	6	30.00	8	40.00	3	15.00
Hierro	5	38.46	0	0	6	46.15	1	7.69	1	7.69
Females:										
Tenerife	18	22.21	2	2.47	6	7.40	35	43.21	20	24.68
Gomera	2	16.67	0	0	5	41.67	3	25.00	2	16.67
Gran Canaria	2	..	0	0	2	..	0	0	2	..
Hierro	2	..	0	0	1	..	2	..	2	..

A large proportion of these crania exhibit loss of teeth in life accompanied by considerable alveolar absorption. In such cases it is not possible to observe the presence or absence of alveolar prognathism. From the foregoing table it may be seen that alveolar prognathism is almost invariably present in those crania in which observation is possible. Most frequently this prognathism is moderate; often there is but a slight amount; a proportion ranging from about 8 per cent to 25 per cent exhibit a marked degree of alveolar protrusion.

In the Tenerife series prognathism is somewhat more marked in the female crania than in the male crania — a sex difference frequently observed in other racial groups. No distinct differences between the series from the various islands may be deduced from the table above.

TEETH

TABLE 87. Observations on Dentition

	Complete		Third molars imperfectly erupted		Third molars absent	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	236	93.65	11	4.36	5	1.98
Gomera	31	91.17	2	5.88	1	2.94
Gran Canaria	20	100.00	0	0	0	0
Hierro	12	92.31	1	7.69	0	0
Females:						
Tenerife	72	88.94	4	4.94	5	6.17
Gomera	12	100.00	0	0	0	0
Gran Canaria	6	100.00	0	0	0	0
Hierro	7	100.00	0	0	0	0

TABLE 88. Quality of Teeth

	Poor		Medium		Good		?	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:								
Tenerife	22	8.72	37	14.68	111	44.04	82	32.53
Gomera	9	26.46	7	20.58	17	50.00	1	2.94
Gran Canaria	2	10.00	15	75.00	3	15.00	0	0
Hierro	6	46.15	5	38.46	2	15.38	0	0
Females:								
Tenerife	2	2.47	10	12.34	22	27.14	47	58.02
Gomera	9	75.00	1	8.33	2	16.67	0	0
Gran Canaria	2	..	1	..	2	..	1	..
Hierro	2	..	3	..	1	..	1	..

TABLE 88a. Quality of Teeth

	Caries		Alveolar abscesses		Many teeth lost in life	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	9	3.57	42	16.67	57	22.61
Gomera	0	0	4	11.76	9	26.46
Gran Canaria	1	5.00	6	30.00	6	30.00
Hierro	0	0	3	23.08	5	38.46
Females:						
Tenerife	2	2.47	17	20.99	30	37.04
Gomera	3	25.00	2	16.67	7	58.33
Gran Canaria	0	0	1	..	2	..
Hierro	0	0	1	..	3	..

TABLE 89. Number of Cusps of Upper Molars

	Total Crania	4–4–4	4–4–3	4–4–2	4–3–3	4–3–2
	No.	Per cent	Per cent	Per cent	Per cent	Per cent
Males:						
Tenerife	117	38.46	53.85	2.56	2.56	1.70
Gomera	16	56.25	25.00	6.25	12.50	0
Females:						
Tenerife	20	55.00	35.00	0	10.00	0

Observations on the teeth of these series were limited to those of the upper jaws, because of the lack of associated mandibles. Practically all of the crania had permanent dentitions completely erupted, since adolescent crania were utilized neither for measurements nor for observations. Table 87 shows the numbers and percentages of those crania of adult (in some few cases of sub-adult) age, in which the third molars were imperfectly erupted or had failed to erupt at all. This table shows only those crania in which all of the third molars are absent, and does not include crania in which one or more of the third molars has failed to erupt while the remainder are fully erupted. A tendency toward late eruption or suppression of the third molar is noticeable.

The quality of teeth is judged on the basis of presence and extent of caries, tartar, loss of teeth in early life, abscesses around the roots of moderately worn or unworn teeth, character of the enamel, etc. In general by far the best teeth are found in the Tenerife and

Gomera series, as may be seen from Tables 88 and 88a. But a large proportion of the Tenerife series are unavailable for purposes of these observations, because they are the crania of old or middle-aged persons who have lost all of their teeth. It is probable that many of these individuals whose teeth are entirely gone had poor teeth. It nevertheless is apparent that there are more crania with good teeth and fewer crania with poor teeth in Tenerife than in the remaining islands with the exception of Gomera. This opinion is confirmed by a glance at Table 88a, which shows the incidence of caries, alveolar abscesses, and loss of many teeth in life.

Table 88a shows that dental caries was observed in 3.57 per cent of Tenerife male crania and in 2.47 per cent of female crania. This result is not in agreement with the finding of Von Behr in his series of 115 crania. This writer states that 17 per cent of all of his crania had carious teeth, including 10 per cent of male crania, 26 per cent of female crania, and 31 per cent of children's crania. He says, further, that of all the teeth belonging to male crania 3 per cent were carious, of female teeth 9 per cent, and of children's teeth 9 per cent.[1] This divergence in results may, to some extent, be due to the fact that the present writer did include in his count of carious teeth decayed teeth the condition of which must be ascribed to the fact that they had been worn down until the pulp cavity was exposed and the death of the tooth necessarily followed. It is quite possible that Von Behr included such decayed teeth in his count, as he might well have done.

But that the teeth of the Guanches of Von Behr's series were inferior to those of our series seems certain by the circumstance that Von Behr observed alveolar abscesses in 51 per cent of his male crania and in 50 per cent of his female crania, while in the present series the percentages are 16.67 and 20.99 in the male and female series respectively.

The present writer observed that the teeth of crania coming from the region of Puerto Orotava were much inferior to those of the series from the neighborhood of Candelaria. Local differences in the composition of short series are very likely seriously to impair the value of group generalizations.

In general it may be stated that the ancient inhabitants of Tenerife had excellent teeth. On account of the grit in their food the teeth were subjected to very severe wear and, naturally, when the crowns had been worn down to such an extent that the pulp cavities of the teeth were exposed, decay sometimes set in. Hence alveolar abscesses were not uncommon. Of the Tenerife males 76, or 30.16 per cent, showed teeth deeply worn, while of the females 32, or 39.50 per cent, exhibited this condition. Alveolar abscesses were found in 16.7 per cent of male crania and in 20.9 per cent of female crania. Caries was remarkably rare in the teeth of these people.

From the prevalence of alveolar abscesses in the crania of Gran Canaria and Hierro, and from the larger proportions of skulls showing the loss of many teeth in life, it is clear that the inhabitants of these islands did not possess the excellence of teeth characteristic of the

[1] Op. cit., p. 12 sq.

Guanches of Tenerife. But the male series from Gomera showed no instance of caries in 33 crania, and only 4 crania (11.76 per cent) with abscesses.

The number of cusps on the molar teeth is of considerable anthropological interest. The number theoretically to be found on each upper molar is four, but frequently the third molar, and, in civilized peoples, the second molar also, show considerable reduction in size and in the number of cusps. It is usually very difficult to obtain a proper count of cusps in the teeth of primitive people, because of wear and loss of teeth in life or after death. Considerably less than half of the various crania were available for purposes of such a count. Table 89 gives the percentage of crania in classes based upon the number of cusps on the first, second, and third molars, respectively. Prevailingly there are 4 cusps on the first and second molars, but often the third molar shows but 3 cusps. Over half of the crania of Gomera males and of Tenerife females show the cusp formula 4–4–4, but only about 38.5 per cent of the Tenerife males show this formula. Almost 54 per cent of Tenerife males show the cusp formula 4–4–3. Reduction of the third molar is common even in these people who subsisted on a coarse diet.

Abnormalities of the teeth are rare in the Tenerife crania. The most frequent anomaly is the non-eruption of one of the upper canines. This was noted in 5 male crania (2.98 per cent) and in 2 female crania (2.47 per cent). Irregular eruption due to constriction of the dental arches was observed in 2 male crania only, and in one female cranium. A supernumerary tooth in the incisive region occurred in one male skull, and an accessory dental mass behind the upper right third molar was noted in another male skull. Irregular eruption of a permanent canine, owing to the retention of a milk incisor, occurred in one male skull.

In the Gomera series the only notable anomaly was the failure to erupt of one or more third molars in 6 male crania, or 17.6 per cent of the series. Absence of one or more third molars was observed also in two of a series of 6 female crania from Gran Canaria. On the whole the teeth of females are inferior to those of males in all of the series from the Canary Archipelago. Shovel-shaped incisors occurred in one male cranium from Tenerife.

THE PALATE

TABLE 90. Shape of the Palate

	Parabolic		Hyperbolic		U-shaped		Elliptical	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:								
Tenerife	166	76.85	33	15.27	17	7.87	0	0
Gomera	14	51.85	1	3.70	12	44.44	0	0
Gran Canaria	9	56.25	5	31.25	1	6.25	1	6.25
Hierro	7	70.00	0	0	3	30.00	0	0
Females:								
Tenerife	51	89.47	2	3.51	4	7.02	0	0
Gomera	4	..	0	0	2	..	0	0
Gran canaria	3	..	1	..	0	0	0	0
Hierro	3	..	0	0	3	..	0	0

The most common form of the palate is parabolic. This shape occurs most frequently in all of the series, as may be seen from the table above. In the Tenerife crania it predominates more markedly than in the other series. The U-shaped palate is much commoner in Gomera and in Hierro than in the other two islands. On the other hand the hyperbolic palate is relatively much more common in Gran Canaria than in any of the rest of the archipelago. The elliptical form is always rare and occurs but once in the entire series. This form of palate is usually due to a reduction and inward rotation of the upper third molars and is scarcely a normal palate shape.

Some development of a palatine torus occurs in 19, or 7.53 per cent, of Tenerife male crania, and in 7, or 8.64 per cent, of female crania. It does not occur in any of the crania from the other islands — a somewhat surprising circumstance in view of its frequency in Tenerife.

A high roof of the palate was observed in 54 male Tenerife skulls (21.42 per cent), and in 7 female crania (8.64 per cent). This high palatal roof was not encountered in the other series. Rather marked inter-insular differences in form and characteristics of the palate may then be deduced from the foregoing discussion. These differences are almost equally manifested in the measurements and indices of the palate (cf. p. 118). In Gomera and in Hierro the external palatal breadth is significantly smaller than in Tenerife and in Gran Canaria, and there are many more dolichuranic palates in the former two islands than in the latter two. Brachyuranic palates are commoner in Tenerife than elsewhere.

OBSERVATIONS ON THE SKULL BASE

TABLE 91. Depth of Glenoid Fossae

	Shallow		Medium		Deep	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	4	1.58	28	11.11	219	86.90
Gomera	1	2.94	8	23.52	25	73.52
Gran Canaria	0	0	6	30.00	14	70.00
Hierro	0	0	4	30.77	9	69.23
Females:						
Tenerife	5	6.25	22	27.50	53	66.25
Gomera	0	0	5	41.67	7	58.33
Gran Canaria	0	0	6	..	0	0
Hierro	0	0	5	..	2	..

The glenoid fossae in male crania from Tenerife are deep, in an overwhelming majority of cases. In the other islands also deep glenoid fossae prevail, but not to the same extent. Shallow glenoid fossae are apparently extremely rare in all of the islands, but glenoid fossae of medium depth are very common except in Tenerife. Table 91 shows the distribution of this character in the various series, according to degree of development.

Shallow glenoid fossae are much more common among females, if reliance upon the

TABLE 92. Postglenoid Process

	Absent		Small		Medium		Large		Arthritic fossae	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:										
Tenerife	50	19.84	37	14.68	73	28.98	92	36.50	41	16.28
Gomera	12	35.29	6	17.64	6	17.64	10	29.41	5	14.70
Gran Canaria	8	40.00	3	15.00	3	15.00	6	30.00	0	0
Hierro	3	23.08	3	23.08	4	30.77	3	23.08	3	23.08
Females:										
Tenerife	67	82.72	6	7.40	4	4.94	4	4.94	9	11.06
Gomera	3	25.00	3	25.00	5	41.67	1	8.33	1	8.33
Gran Canaria	1	..	2	..	3	..	0	0	0	0
Hierro	2	..	3	..	2	..	0	0	0	0

results of this table is justifiable. Associated with deep glenoid fossae, pronounced developments of the postglenoid process or tubercle are common. On the other hand very shallow glenoid fossae usually have rudimentary postglenoid processes or none at all, for in such cases the posterior wall of the glenoid fossa is formed by the tympanic bone. Elsewhere the present writer has dealt with this subject and has pointed out that pronounced postglenoid processes occur not infrequently in recent crania of Europe and North Africa.[1] Such processes also occur in crania of dolichocephalic American Indians, and probably in other long-headed crania. They are much less frequent among females than among males, as may be observed in Table 92.

The postglenoid process shows its maximum frequency and development in the males of the island of Tenerife, where, indeed, it occurs oftener, and is larger, than in any other group of crania examined by the writer.

Signs of arthritis in and around the glenoid fossae are quite common in the Tenerife, Gomera, and Hierro series. It is highly probable that these conditions are consequent upon alveolar abscesses caused by the decay of worn-down teeth. One Tenerife female cranium (No. 73) had the mandibular condyles anchylosed to the glenoid fossae.

TABLE 93. Size of Styloid Processes

	Small		Medium		Large	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	79	32.91	100	41.66	61	25.41
Gomera	3	10.00	17	56.67	10	33.33
Gran Canaria	3	17.65	9	52.94	5	29.41
Hierro	0	0	9	81.82	2	18.18
Females:						
Tenerife	24	30.38	40	50.63	15	18.99
Gomera	2	16.67	10	83.33	0	0
Gran Canaria	2	..	2	..	1	..
Hierro	0	0	5	..	1	..

[1] E. A. Hooton, On Certain Eskimoid Characters in Icelandic Skulls, American Journal of Physical Anthropology, vol. 1, no. 1. January–March, 1918, p. 62 sqq.

TABLE 94. Depression of Petrous Parts of Temporal Bones

	Absent		Small		Medium		Pronounced		?	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:										
Tenerife	12	4.76	51	20.23	166	65.87	19	7.53	4	1.58
Gomera	0	0	8	23.53	21	61.76	4	11.76	1	2.94
Gran Canaria	0	0	4	20.00	14	70.00	2	10.00	0	0
Hierro	0	0	4	30.77	8	61.64	0	0	1	7.69
Females:										
Tenerife	4	4.94	39	48.13	37	45.67	0	0	1	1.23
Gomera	0	0	5	41.67	7	58.33	0	0	0	0
Gran Canaria	0	0	3	..	3	..	0	0	0	0
Hierro	0	0	5	..	2	..	0	0	0	0

TABLE 95. Size of Middle Lacerate Foramina

	Small		Medium		Large		?	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Males:								
Tenerife	78	30.95	148	58.73	22	8.72	4	1.58
Gomera	3	8.82	26	76.47	4	11.76	1	2.94
Gran Canaria	4	20.00	14	70.00	2	10.00	0	0
Hierro	1	7.69	9	69.23	2	15.38	1	7.69
Females:								
Tenerife	31	38.27	48	59.25	1	1.23	1	1.23
Gomera	2	16.67	10	83.33	0	0	0	0
Gran Canaria	2	..	4	..	0	0	0	0
Hierro	2	..	5	..	0	0	0	0

TABLE 96. Pterygo-spinous Foramina

	Indicated		Complete on one side		Complete on both sides	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	42	16.66	9	3.57	7	2.77
Gomera	6	17.65	2	5.88	0	0
Gran Canaria	5	25.00	0	0	0	0
Hierro	1	8.33	0	0	0	0
Females:						
Tenerife	8	9.87	1	1.23	1	1.23
Gomera	2	16.67	0	0	0	0
Gran Canaria	0	0	0	0	0	0
Hierro	1	..	0	0	0	0

TABLE 97. Dehiscences in the Floor of the Auditory Meatus

	Males		Females	
	No.	Per cent	No.	Per cent
Tenerife	34	13.49	25	30.85
Gomera	11	32.35	3	25.00
Gran Canaria	0	0	2	33.33
Hierro	4	30.77	4	57.14

Some of the more important observations on the skull-base have been dealt with in Tables 93–97. Small styloid processes seem to occur more frequently in the Tenerife crania than in those from the other islands, although in all of the series styloids of medium size are most common.

In the crania of large-brained peoples the petrous portions of the temporal bones are often noticed to be depressed deeply below the level of the basilar process of the occipital bone, when the skull-base is held upward. In crania of small cubical contents this is rarely the case, and usually the most primitive crania show no depression at all. In the skulls of ancient Canary Islanders a medium degree of petrous depression, such as prevails in European crania, is most common (Table 94). Almost 5 per cent of the crania of both sexes from Tenerife show no depression of the petrous parts. The absence of such a feature was not observed in any of the crania from the other islands. Gomera and Gran Canaria male crania show somewhat larger percentages of crania with pronounced petrous depression, though it should be recalled that the series from these islands are too small to be very dependable. Deep depression of the petrous parts apparently does not occur in female crania, although in Tenerife the percentage of female crania in which no depression is found is not significantly larger than in the male series. More than twice as many female crania, however, show a slight degree of depression.

Large middle lacerate crania usually go with deeply depressed petrous parts, in capacious skulls. From Table 95 it may be deduced that these foramina are significantly smaller in Tenerife, and probably in Gran Canaria, crania than they are in the crania from Gomera and from Hierro.

A pterygo-spinous foramen is frequently found in extra-European races and is a simian character. Such a foramen is said to be " indicated " when it is not quite complete and the gap presumably was closed by a fibrous band. Table 96 shows the occurrence of this feature in Canary Islands crania. It is quite rare, being found in a complete form in Gomera and Tenerife only. Although it was not discovered in the crania of Gran Canaria and Hierro, this simply means, probably, that complete pterygo-spinous foramina are at least as rare as they are in the crania from the two islands which are more adequately represented in this investigation.

Dehiscences in the floor of the auditory meatus, caused by incomplete ossification of the tympanic plate, are fairly common in the adults of all races. From Table 97 it appears that such gaps do not occur as frequently in Tenerife crania as in crania from Gomera and from Hierro. Strangely enough in 20 male crania from Gran Canaria there were no dehiscences at all.

INTER-INSULAR DIFFERENCES IN MORPHOLOGICAL OBSERVATIONS

In order to obtain some quantitative measure of the degree of resemblance and difference between the cranial series of the various islands, with respect to the morphological features observed, the following method was adopted. For each of 27 different tables, rankings of the relative positions of each island series with respect to every other island were made. Thus, in the list of rankings with respect to Tenerife, the tabulation of percentages of crania having alveolar abscesses indicates that Gomera is most like Tenerife, Hierro next, and Gran

Canaria least. Therefore for this character in the Tenerife rankings, Gomera receives the rank of 1, Hierro 2, and Gran Canaria 3. These rankings are made for 27 tables of observed characters, and a mean of the rankings is taken. The result in the case of the Tenerife rankings is: Gomera 1.74, Gran Canaria 1.85, Hierro 2.40. This means that, as regards the occurrence and development of observed characters, the crania of Gomera most closely resemble those of Tenerife; that almost as close a degree of resemblance is shown by the crania of Gran Canaria, and that the crania of Hierro show considerably greater divergences from those of Tenerife. If we compare this result with the mean indicial difference (p. 122) we find that the latter is greatest between Tenerife and Gomera. We are therefore faced by a divergence of results. Gomera crania stand nearest to those of Tenerife as regards morphological observations, but farthest away as regards mean indicial difference.

Taking the rankings of observations relative to the Gomera series we find that Tenerife crania are most similar, Gran Canaria crania slightly less so, and Hierro crania farthest removed in point of morphological resemblances. But the indicial differences show that Hierro crania are most like those of Gomera, and Tenerife crania least so. Here again is a marked discrepancy.

The rankings of other islands with respect to Gran Canaria are: Tenerife 1.85, Gomera 1.87, Hierro 2.28. Thus Tenerife and Gomera are in substantially the same position with regard to morphological features treated in respect to Gran Canaria; and Hierro again occupies a more remote place. According to mean indicial differences, Tenerife crania are most like Canaria crania, but Gomera crania are least so.

In the Hierro rankings the Gran Canaria series is most similar (1.85), Gomera next (1.91), and Tenerife the most remote (2.24). This, at length, is in agreement with the mean inter-insular indicial differences.

I do not place overmuch confidence in the method utilized for determining nearness of relationship in morphological features. But I feel that in general it shows at least this much — that Tenerife, Gomera, and Gran Canaria differ among themselves to about the same extent, and that the skulls from Hierro occupy a more remote position with respect to any of the other islands. The fact that these differences of morphological features do not accord well with those determined by the method of mean indicial differences may imply that in mixed types morphological features are not linked with size and proportions. But it should be remembered that here we are using group averages and are not considering individual correlations and associations. At a later stage in this investigation we shall determine inter-insular resemblances with respect to individual types. Group averages are at best unrepresentative, and at worst fictitious.

PATHOLOGICAL OBSERVATIONS

TABLE 98. Traumatic Lesions

	Depressed lesions		Depressed fractures		Linear fractures	
	No.	Per cent	No.	Per cent	No.	Per cent
Males:						
Tenerife	24	9.52	6	2.38	4	1.58
Gomera	6	17.65	0	0	0	0
Gran Canaria	0	0	0	0	0	0
Hierro	0	0	0	0	0	0
Females:						
Tenerife	7	8.64	2	2.47	0	0
Gomera	1	8.33	0	0	1	8.33
Gran Canaria	0	0	0	0	0	0
Hierro	0	0	0	0	0	0

Pathological features of the various series of crania studied are almost entirely of traumatic origin with the exception of dental caries, alveolar abscesses, and arthritic changes about the glenoid fossae and the Foramen magnum, which are probably due to alveolar abscesses.

The most common lesions of traumatic origin are healed, depressed, and cicatrized areas of all sizes. These are usually found on the frontal bone, often on the parietal. They occur most commonly on the left side, due to right-handed blows. Such lesions were observed in 9.5 per cent of Tenerife male crania and in 8.6 per cent of female crania. In Gomera they seem to be even more common, if reliance can be placed upon our somewhat short series. No traumatic lesions of any kind were observed in the crania from Gran Canaria and Hierro. Verneau states that a quarter of his male crania from Tenerife showed lesions. Shrubsall is silent on this subject. Von Behr mentions no lesions of traumatic origin. Verneau says nothing of the pathology of crania from the islands other than Tenerife. Of 52 Tenerife crania studied by Von Luschan, 13 (25 per cent) showed lesions of the type described above.

Healed depressed fractures of the skull were observed in 6 male crania of our series from Tenerife, and in 2 female crania (cf. Plate 13, fig. 3). Three of the former were fractures of the left parietal, one of the right parietal, and one of the frontal bone.

Healed linear fractures were noted in 6 male crania from Tenerife and in one female cranium from Gomera. Cranium No. 39 from Tenerife has an old scar on the lower border of the left orbit, due to a blow; another scar of traumatic origin in the middle of the frontal region; 3 deep scars on the left parietal; and a healed linear fracture extending from one temporal bone to the other, a short distance behind the coronal suture. Cranium No. 105 exhibits a healed linear fracture on the right side of the frontal bone. No. 118 has a fracture of the left malar; and 4 crania, Numbers 13, 14, 27, and 425 exhibit raised exostoses, possibly of traumatic origin. Many crania have a number of scars in different regions, often near the left external angular process. No. 120 shows a cut on the right brow-ridge.

Pathological features not due to traumatic causes are very rare in this series. Cranium 198, a young male adult of Tenerife, has an extensive bony growth in the nasal cavity, involving both antra. The left side of the nasal floor is expanded downward and the left half of the palate is disproportionately large. Cranium 241, also that of an adult male, shows a marked deflection of the nasal septum. Cranium 121 is a pronounced scaphocephalus.

Cranium 297, that of a male from Gran Canaria, shows an exostosis in the left auditory meatus. One male cranium from Gomera exhibits a pronounced facial asymmetry.

TREPANATION

The existence of the surgical practice of trepanation in the island of Tenerife was first noted by Von Luschan in 1896. In a series of 52 Tenerife crania examined by him three unquestionable examples of trepanned crania are described, and other incomplete trepanations are noted.[1]

In the extensive series of Tenerife crania examined by the present writer at the Museum of Santa Cruz de Tenerife, only one trepanned cranium was found. This is one of a series of crania found in a cave in El Chorillo near Mte. Taco, a few miles southwest of Santa Cruz. The skull is that of an aged female and exhibits a healed linear fracture extending from a point on the summit of the left parietal, just behind the coronal suture clear across the right parietal to the temporal bone. The trepanation is a circular cicatrized hole only 6 mm. in diameter, about the middle of the right side of the lambdoid suture.

A much better example of trepanation is the cranium in the possession of Don Ramon Gomez, a chemist and a collector of antiquities in Orotava. Through the courtesy of Sr. Gomez I was allowed to examine this specimen, which is represented in Plate 37. It is the cranium of a middle-aged male, found in the Bco. Herques, near Fasnia. The left parietal bone shows an extensive oval hole, obviously due to trephining, the edges of which are well cicatrized. A large depressed lesion may also be observed near the left parietal tuberosity, as well as an extensive exostosis on the left side of the frontal bone.

The one cranium from the island of La Palma which I was able to study, No. 756, the skull of a middle-aged male, contains a most interesting perforation in the sagittal suture, about 15 mm. back of bregma. This hole is 10 mm. in diameter at the bottom and 20 mm. in diameter at the top, circular in shape, and with clean edges. It seems to have been made post mortem by a scraping process, but may be an unsuccessful trephining. This recalls the fact that Von Luschan found 7 of his series of 52 Tenerife crania, with scars in the bregma region. He considered that the probabilities favored the opinion that these scars might represent some kind of a surgical operation. Von Behr also observed bregmatic lesions in 17 per cent of his adult Tenerife crania. It is remarkable that I found no such bregmatic

[1] F. v. Luschan, Über eine Schädelsammlung von den Canarischen Inseln, in Hans Meyer, Die Insel Teneriffe, Leipzig, 1896, p. 285 sq.

scars in any of the 350 Tenerife crania which I studied.[1] Whether there is any connection between the puzzling bregmatic scars observed on Tenerife crania, and the perforation near bregma of this La Palma skull I am unable to say.

SUMMARY OF OBSERVED CHARACTERS FOR THE VARIOUS ISLANDS

Tenerife. In regard to the breadth, height, and slope of the frontal region the most common combination in Tenerife males is a broad forehead of medium height and medium slope. Almost equally common is a forehead of medium breadth with a medium development of height and slope. A type with broad, high frontal region of medium slope comprises almost 10 per cent of the series. The females differ from the males in that the height of the forehead is less and the slope is less. Metopism is extremely common in both sexes, but more frequent in males. In a little more than one-half of the males, brow-ridges are of medium development, and the remainder are almost equally divided between small and large. In Tenerife females the brow-ridges are rarely large, and in 40 per cent of cases they are entirely undeveloped.

The most common form of sagittal region in Tenerife males is one in which the breadth across the parietals is pronounced and there is no sagittal elevation and no postcoronoid depression. This type comprises about 30 per cent of all males. A similar type, but slightly less broad, includes another 23 per cent. Slight or medium sagittal elevations occur in about 21 per cent, and slight or medium postcoronoid depressions in about 23 per cent. But these features are not found in association. The females have about the same type composition as the males, except that there are fewer crania with sagittal elevations.

In half of the male series the temporal region is of medium fullness; in the other half compressed and protuberant temporal regions occur in equal proportions. In the females both compressed and protuberant temporal regions are more common than in the males. Over one-half of the Tenerife males have large mastoid processes, and only one-tenth have small mastoids. In the females small, medium, and large mastoids occur in substantially equal proportions.

In the Tenerife crania of both sexes a moderate degree of convexity of the occipital region is found in about 60 per cent of cases, while 31 to 34 per cent have protuberant occiputs. A few crania have flat occipital regions. An occipital torus rarely occurs.

About 8 per cent of Tenerife male crania show a relative simplicity in the serration of the cranial sutures; the remainder of the series show sutures of medium complexity and intricate sutures in about equal proportions. In the female series almost 66 per cent have complicated sutures. About 32 per cent of the crania of each sex show no trace of external obliteration of sutures. Approximately 5 per cent of males and 7 per cent of females show almost complete sutural obliteration. The sequence of sutural obliteration in males is sagittal, coronal, lambdoid; in females it is coronal, sagittal, lambdoid. Wormian

[1] But one such scar occurs in a cranium from a cave near San Andres, Tenerife, collected by the present writer.

bones are extremely common in both sexes. They are found in the lambdoid suture in 75 per cent of male crania and in 67 per cent of female crania. Elsewhere they occur less frequently. The pterion in both sexes is almost invariably of a broad H-form.

About one-third of the Tenerife crania have no parietal foramina. In the others two small foramina or one small foramen are usually found.

A nasion depression is absent in about 6 per cent of Tenerife male crania and in 48 per cent of female crania. Of the remaining male crania, one-half have a moderately developed nasion depression, and the rest are about equally divided between slight and pronounced developments of the feature. A similar division occurs among the females. The nasal bridge is narrow and high in 39 per cent of males, and of medium height and medium breadth in 38 per cent. About 13 per cent of the nasal bridges of male crania are broad and of variable height. Only about 17 per cent of the female crania have narrow and high noses, while 33 per cent of them are of medium height and medium breadth; 18 per cent are broad and low, and 13 per cent are broad and of medium height. The nasal aperture in Tenerife males is more often of medium breadth than narrow, and oftener narrow than broad. In the females it is broad in half of the series, medium in one-third, and narrow in the remainder. The nasal aperture has sharp lower borders in 62 per cent of Tenerife males, and in the same percentage of females. About 15 per cent of males and 7 per cent of females have slight subnasal grooves.

Orbits are low, medium, and high in almost equal proportions. The infraorbital suture is complete on both sides in 33 per cent of males, and complete on one side in 16 per cent. Females show approximately the same distribution of this feature. Suborbital fossae are prevailingly of medium depth in both sexes. Deep and shallow suborbital fossae each occur in about 18 per cent of cases in males and females alike.

Small malars occur in 19 per cent of males; of the remainder a little more than half are of medium size and the rest large. In the female series 17 per cent have large malars, 51 per cent medium, and the rest small. The zygomata are distributed in size substantially as are the malars, but there are rather more males with large malars than with large zygomata.

In about one-fifth of our series, loss of teeth in life and alveolar absorption have prevented observation as to the extent of alveolar prognathism. In other crania it is generally present. It is pronounced in 18 per cent of males and in 25 per cent of females.

Dentition is complete in 94 per cent of the Tenerife male series and in 89 per cent of the female series. The remaining crania are adult crania with non-erupted third molars or canines, or, in some few cases, sub-adults. The quality of the teeth cannot be estimated in about one-third of the males and in more than one-half of the females. Of the remaining male crania 65 per cent have good teeth and only 13 per cent have poor teeth. In the case of the females 61 per cent of those observable have good teeth and 6 per cent have poor teeth. Caries is very rare in both sexes, but alveolar abscesses due to excessively worn

teeth are found in 17 per cent of males and in 21 per cent of females. Twenty-three per cent of male crania and 37 per cent of female crania show the loss of many teeth in life. A tendency toward reduction of cusps of the upper third molar is more noticeable in male crania than in female crania. Anomalies in the dentition of Tenerife crania are very rare.

The shape of the palate is parabolic in 77 per cent of male crania and in 89 per cent of female crania. Hyperbolic palatal forms occur in 15 per cent of males and U-shaped palates in 8 per cent. In females these two shapes occur in 3.5 per cent and in 7 per cent, respectively. The palatine torus occurs in about 8 per cent, regardless of sex. High palatal roofs occur in about one-fifth of male crania, but in only 9 per cent of female crania.

Glenoid fossae are deep in 87 per cent of males and in 66 per cent of females. Four-fifths of the male crania have postglenoid processes, usually well developed. Only 17 per cent of females exhibit this feature. Arthritic conditions about the glenoid fossae are found in 16 per cent of male crania and in 11 per cent of female crania.

Styloid processes in male crania are usually of medium size and rather more frequently small than large. A similar distribution occurs in the female series. Depression of the petrous portions of the temporal bone is usually medium in males and rarely pronounced. In females it is slight rather more often than medium, and never pronounced. Absence of any petrous depression was noted in about 5 per cent of the crania of each sex.

Pterygo-spinous foramina are rare in both sexes of Tenerife crania. Dehiscences in the floor of the auditory meatus occur in 13 per cent of males and in 31 per cent of females, a common enough sex difference.

Gomera. The frontal region of the Gomera male cranium is oftenest of medium height, medium breadth, and medium slope (20.5 per cent). It is frequently broad, and of medium height and medium slope (15 per cent). About 15 per cent of Gomera male crania have narrow frontal regions of variable height and slope. About 20 per cent have low foreheads. High foreheads include 23.5 per cent. In the generally well-developed frontal region they resemble the males of Tenerife; but in more of the latter the frontal breadth is pronounced. Nevertheless the mean minimum frontal diameter is the same for both islands (cf. Table 23, p. 95). The slope of the frontal region is prevailingly moderate; it is rarely protuberant, sometimes receding. The crania of Gomera females are usually of more than average frontal breadth, medium height, and medium slope. A persistent frontal suture occurs in one of 34 male crania from Gomera (2.94 per cent), and in one of 12 female crania (8.33 per cent). Certainly the metopic suture is less common in this island than among the males of Tenerife (10.3 per cent). A median frontal elevation, which is common in Tenerife males (20.2 per cent), occurs in but 8.82 per cent of the male crania from Gomera. But this median frontal crest was observed in 3 of 12 female crania from this island.

The supraorbital ridges of Gomera crania are usually of medium development in males, but are large in about 29 per cent, and small in 20.5 per cent. The size distribution is very

similar to that of Tenerife males. The females show 25 per cent with large brow-ridges; but the series of females includes only 12 crania.

A sagittal elevation occurs in 20.5 per cent of males, but in only 8.3 per cent of females. In this character there is again a close similarity to the crania of Tenerife. Postcoronoid depressions are rare in our Gomera series (males 8.82 per cent), although Verneau observed them in almost 35 per cent of his Gomera series. The breadth across the parietal tuberosities is prevailingly medium. The temporal region usually shows a moderate degree of fullness, (55.8 per cent males; 41.6 per cent females), and is protuberant less often in the males (14.7 per cent), than in Tenerife males (25.70 per cent). This region is bulging in 5 of our 12 females from Gomera (41.66 per cent). The mastoid processes of Gomera crania are usually of medium size, but are more often small than large. In this respect they differ from Tenerife crania. The occipital region is flat or steep in Gomera crania from twice to three times as often as in any of the other Canary Islands. The percentage of Gomera males with flat occiputs is 23.5, and of females 16.66. Nevertheless the majority of Gomera crania show a moderate convexity of the occiput.

The serration of sutures in Gomera crania is less complicated than in any of the other islands. Only 6 per cent of males show complicated sutures. But the majority of crania show a medium intricacy. In our series of 34 males from Gomera, 32.35 per cent show no external trace of sutural obliteration. Almost complete obliteration has taken place in 6 crania or 17.6 per cent. There is some reason for believing that sutural obliteration set in more rapidly among the Gomerythes than among the Guanches; for in the large male series of 252 crania from Tenerife only 13, or 5.15 per cent, show almost complete obliteration. The sequence of sutural obliteration is sagittal, coronal, lambdoid. The inverted H-pterion, involving a fronto-temporal articulation, occurs in 2 male crania from Gomera (5.88 per cent), and in one female cranium (8.33 per cent). This form of pterion is much more common in Gomera crania than in the other Canary Islands series. Generally Gomera crania have pterions of medium or broad H-form. Wormian bones are very common in the Gomera crania in all of the usual places except the temporo-occipital, where none were found in the crania of either sex. But these intercalary bones are far less common than in the crania of Tenerife or of Gran Canaria.

Parietal foramina are absent in 35 per cent of Gomera males, and in 16.6 per cent of females. Often there are two small foramina, and in some cases the number is reduced to one. A nasion depression of medium depth is found in the majority of males, but is usually absent in the crania of the female series.

Usually the nasal bridge is of medium height and medium breadth in both sexes. But it is broad and low, or broad and of medium height, much oftener than in the Tenerife series. The nasal aperture is more frequently broad than in Tenerife crania, and the whole nose is shorter. Lower borders of the nasal aperture are sharp in the majority of cases. Orbits are lower than in the Tenerife series, and suborbital fossae are usually of medium

depth. As in Tenerife, the malars and zygomata are commonly of medium size, but often large. Alveolar prognathism is invariably present, usually in a moderate degree. About one-half of the males have good teeth; but the females include 9 crania with poor teeth from a series of 12 skulls. Alveolar abscesses are less common than in any of the other series (11.7 per cent in males and 16.7 per cent in females). The upper molars usually have 4 cusps, but non-eruption of the third molar was observed in 6 male crania or 17.6 per cent of the series.

The shape of the palate is parabolic in 52 per cent of males, but hypsiloid or U-shaped in 44.4 per cent. The U-shaped palate is rare in Tenerife and Gran Canaria, but common in Gomera and in Hierro.

The glenoid fossae are usually deep, and some development of a postglenoid tubercle occurs in about 65 per cent of male crania, but is absent more frequently than in the Tenerife series. Styloids are usually of moderate size; the petrous portions of the temporal bones are mediumly depressed; the middle lacerate foramina are almost invariably medium in size. Indications of the pterygo-spinous foramen are common. Dehiscences in the floor of the auditory meatus are found in about one-third of the males and in one-quarter of the females. In this feature the Gomera crania resemble those of Hierro and diverge from those of Tenerife and Gran Canaria.

Gran Canaria. Half of the male crania from Gran Canaria are of medium breadth in the frontal region and half are classified as broad. Of 20 crania, 5 are of medium height, medium breadth, and medium slope, while 5 more are broad and of medium height and slope. Only one skull has a retreating frontal region, and there is but one (5 per cent), with a metopic suture. Three crania (15 per cent), have no development of the supraorbital ridges, but these are large in 7 crania (35 per cent), and small and medium each in 5 crania. Brow-ridges are then absent in an unusually large number of the males. Half of a female series of 6 crania lack brow-ridges.

A sagittal crest is present in 35 per cent of the male crania from Gran Canaria but absent in all 6 females. The postcoronoid depression occurs in but one of 20 male crania. The temporal region is most frequently compressed (40 per cent), but is also of medium fullness and protuberant in almost equal proportions (30 per cent of males). Mastoids are small, medium, and large in almost equal numbers. The occipital region is flat in but one male and one female cranium; it is protuberant in 40 per cent of the males. The distribution of this feature is substantially the same as in the Tenerife series.

The sutures are medium in serration in 55 per cent of males, complex in 25 per cent, and simple in 20 per cent. Sutural complexity is less frequent than in Tenerife and Hierro, but more common than in Gomera. Seven of the male crania, or 35 per cent, show no external obliteration of sutures. In 6 crania, or 30 per cent, obliteration is beginning in the coronal; in 3, or 15 per cent, it is beginning in the coronal and sagittal; in 3 crania obliteration is

beginning in all three of these sutures, and in one cranium the coronal and sagittal sutures are largely obliterated, while the lambdoid is beginning to close. This would indicate that the coronal suture begins to close before the sagittal, which is contrary to what was observed in Tenerife and Gomera males, but in agreement with the order of sutural occlusion in Tenerife females. Priority of coronal obliteration is also observable in the two crania from Gran Canaria in the Peabody Museum. The form of the pterion is without exception H. Wormian bones are extremely common in the lambdoid suture (67 per cent of males); also they frequently occur in the squamous suture (20 per cent), and at pterion (20 per cent). The percentage distribution of Wormian bones is almost identical with that of the Tenerife males. In the female crania also, Wormian bones are present in the majority of cases. Parietal foramina are absent in 35 per cent of males. Nine of the remaining 13 crania have one parietal foramen each, and this number is the usual one in the female crania also.

The nasion depression is absent in 45 per cent of males, and pronounced in but one cranium. In this feature the crania of Gran Canaria are strongly differentiated from those of Tenerife and Gomera. In all 6 female crania this depression is absent. The nasal bridge is usually of medium breadth and medium height (50 per cent of each sex), often high, but infrequently narrow. The lower borders of the nasal aperture are sharp in half of the males, but dull in 40 per cent. Slight subnasal grooves occur in 15 per cent of males. The nose shows somewhat more primitive characteristics than in the Tenerife and Gomera series. Orbits are usually of medium height but somewhat broad. The infraorbital suture is absent in 70 per cent of males and 83 per cent of females. Suborbital fossae are prevailingly of medium depth but more often shallow in Canaria males than in those of Tenerife and Gomera. The malars and zygomata present no consistent development in size, but are sometimes very large, often medium, and not infrequently small. A variable degree of alveolar prognathism is present in all of the crania from Gran Canaria.

The dentition is complete in all of the series and the teeth are usually of medium quality. Caries was observed in but one male skull, but alveolar abscesses are present in 30 per cent of males, the highest proportion in any of the islands.

As in the other islands so in Gran Canaria the commonest palate form is the parabolic. But 31.2 per cent show hyperbolic forms in which the dental arches diverge sharply posteriorly. This type also occurs in 15.2 per cent of Tenerife males, but is uncommon in Gomera and Hierro.

The glenoid fossae are usually deep in Gran Canaria male crania and medium in the female crania. Forty per cent of the male crania show no trace of a postglenoid tubercle, but it is large in 30 per cent of the series. Styloids are usually of medium size and the petrous portions of the temporal bones show a moderate depression. The middle lacerate foramina are generally of medium size. No complete pterygo-spinous foramen was found in any of the Gran Canaria skulls, but indications of a foramen occur in 25 per cent of the males. Dehiscences in the floor of the auditory meatus are entirely lacking in the male

crania, though fairly common in the skulls of males of the other islands. Two of 6 female crania, however, show such gaps in the tympanic bone.

Hierro. The Hierro series studied by the present writer includes only 13 male crania and 7 female crania, and is hence rather unsatisfactory. But there is no doubt that crania from this island stand quite apart from all of the other island groups in morphological characteristics.

The frontal region is broad or medium in breadth; the height is usually moderate and the slope about average. No metopic suture occurs in the 13 male crania, but one of 7 female crania exhibits this feature. The supraorbital ridges are prevailingly small, and are large in but one skull. Brow-ridges are, on the whole, much smaller than in the series from the other islands.

The sagittal region lacks any elevation, except in one male cranium (7.69 per cent), and in one female cranium. Usually the breadth across the parietal tuberosities is moderate. A postcoronoid depression was found in one male cranium only. The temporal region is never compressed in males, but usually of medium fullness, and protuberant in 31 per cent of cases. Mastoids are usually of medium size, often small, and rarely large. The occiput is moderately convex in the majority of cases, but protuberant in 23 per cent.

The sutures of Hierro males are usually complicated, approaching in this respect the sutures of Tenerife males. In the females, however, only a moderate degree of intricacy is prevalent. In 4 of 13 male crania, or 30.77 per cent, the sagittal and lambdoid sutures were almost obliterated, while the coronal showed the beginnings of occlusion in the external parts only. In all the rest of the crania different stages and combinations of sutural ossification were displayed, no two being alike. There seem to be indications of a sagittal-lambdoid-coronal sequence in sutural occlusion — a sequence which is by no means common. This sequence occurred in only 2 of 252 Tenerife male crania or 0.79 per cent. It was also found in 2 female crania from Tenerife, but does not occur in any of the crania from Gomera or from Gran Canaria. The form of the pterion is invariably H. Wormian bones seem to be less common in the Hierro crania, both male and female, than in the crania from the other islands, with the exception of epipteric bones, which are more frequent. Wormian bones in the lambdoid suture are not half as frequent as they are in Gran Canaria or in Tenerife. They occur in but 31 per cent of Hierro males. Parietal foramina are absent in one-third of the males and variable in number and size in the remainder.

A nasion depression is never pronounced in the Hierro crania. Usually it is slightly marked and often absent. In this respect Hierro crania resemble those from Gran Canaria. Verneau, speaking of his large assortment of Hierro males (79 in all), says that the nose is usually long and narrow. The present writer, on the contrary, found short and rather broad noses more common here than in any of the other islands. The bridge of the nose is of medium breadth and medium height in 38.5 per cent of males. It is narrow and high

in 23 per cent of males, and broad and low in 23 per cent. In the females, broad and low noses occur in 3 of a series of 7 crania (42.86 per cent). The lower borders of the nasal aperture are much more frequently dull and ill defined than in any of the other islands except Gran Canaria. In one male cranium there was no lower border at all to the nasal aperture. It may then be said that, on the basis of the short series studied, the inhabitants of Hierro present more primitive nasal features than the people of any of the other islands.

The orbits are usually low, or of medium height. An infraorbital suture on one side, or on both sides, occurs in about 31 per cent of cases. The suborbital fossae are apparently shallow in the majority of cases, although observations on this feature were possible in but 8 of 13 male crania. Malars and zygomata are rarely small in these crania, and in about 50 per cent of cases they are decidedly large.

A large proportion of the Hierro crania show loss of teeth and absorption of the alveolar processes to such an extent that observations as to alveolar prognathism are not possible. In the rest of the series a moderate alveolar prognathism is usually observable. Our short Hierro series seemed to contain more crania with evidences of early loss of teeth through disease than any of the other series, though no carious teeth were actually observed. Alveolar abscesses were common. Irregularities of eruption or of number of teeth were not observed.

The shape of the palate could not be determined in 3 of a series of 13 male skulls, but of the remainder 7 were parabolic and 3 U-shaped. In relative frequency of the U-shaped palate Hierro natives seem to be allied to the inhabitants of Gomera, whereas in Tenerife and Gran Canaria this form seems to have been rare.

Glenoid fossae are usually deep, and a varying development of a postglenoid process is found in 77 per cent of male crania. The styloid processes are prevailingly of moderate size; the depression of the petrous portions of the temporal bones is usually moderate, never pronounced. The middle lacerate foramina are usually of medium size; pterygo-spinous foramina were not observed. Dehiscences in the floor of the auditory meatus are very common.

MEASUREMENTS OF INDIVIDUAL CRANIA FROM FUERTEVENTURA AND LA PALMA

Table 99 gives measurements and indices of 2 male crania from Fuerteventura and one male cranium from La Palma, set against the means of our male series from Tenerife and the means of Verneau's series of 8 male crania from La Palma.

These isolated crania happen to be those of rather large-headed individuals. One of the Fuerteventura crania is only 190 mm. long; the other is 197 mm.; and the La Palma skull is 198 mm. long. All of these are above the averages for Tenerife and La Palma. The breadths of the Fuerteventura crania are a little above the Tenerife average (142 mm.), and the breadth of the La Palma skull is somewhat above that of the Verneau series.

TABLE 99. Measurements of Crania from Fuerteventura and La Palma

	Tenerife	Fuerteventura		La Palma	
	Mean	No. 484	No. 728	No. 756	Mean of 8 crania (Verneau)
Males:					
Glabello-occipital length	185.8	190	197	198	186
Breadth maximum	142.1	144	142	140	138
Basion-bregma height	131.9	130	137	146	131
Circumference maximum	522	535	536	538	520
Nasion-opisthion arc	369	386	374	394	368
Transverse arc	304	314	300	321	291
Minimum frontal diameter	96	101	97	96	101
Alveon-nasion height	70	67	(72)	76	..
Bizygomatic diameter	132	?	141	144	128
Nasal height	51	52	56	53	49
Nasal breadth	24	23	24	27	21
Orbital height					
right	33	31	35	32	32
left	33	34	35	32	32
Orbital breadth					
right	40	39	44	43	39
left	40	38	42	43	..
Basion-alveon	94	92	106	106	..
Basion-nasion	100	100	112	113	102
Palate					
External length	53	?	?	60	55
External breadth	64	?	?	66	..
Cranial index	76	75.79	72.08	70.71	74.19
Length-height index	70.47	68.42	69.54	73.74	70.43
Breadth-height index	93.52	90.28	96.48	104.29	94.93
Upper facial index	52.14	?	51.06	52.77	..
Nasal index	47.46	44.23	42.86	50.94	42.86
Mean orbital index	81.42	84	81	74	82
Gnathic index	93.25	92.00	94.64	93.81	..
External palatal index	119.96	?	?	110	..

One skull from Fuerteventura has a cranial index of 76 and the other 72. The Tenerife mean is 76, but plenty of Tenerife crania have indices as low as 72. The cranial index of the La Palma skull is only 70.7, whereas the mean of Verneau's series is 74.2 and the minimum 72.

One of the Fuerteventura crania (No. 484) has nearly the same basion-bregma height as the average Tenerife males (132), but the other is higher (137 mm.) and the La Palma skull has a basion-bregma height of 146 mm., as compared with an average of 131 mm. for Verneau's series. But absolute measurements of these three isolated crania cannot be very profitably compared with the means of series, because of the fact that we are evidently dealing with unusually large skulls. The length-height index of both Fuerteventura crania puts them on the upper border of the chamaecephalic class and almost at the mean of Tenerife males (70). The skull from La Palma has a length-height index of 73.7 as against the mean of 70.43 in Verneau's series.

In breadth-height indices these three isolated crania include one tapeinocephal, one

metriocephal, and one akrocephal. Such variations occur within the Tenerife male series and are not necessarily significant.

On the basis of measurements it may be concluded that the two crania from Fuerteventura and the one cranium from La Palma fall within the limits of the Tenerife series of males, and belong to metric and indicial types which occur in the islands of which the craniology is better known.

DESCRIPTIONS OF INDIVIDUAL CRANIA FROM FUERTEVENTURA AND LA PALMA

Fuerteventura. No. 484 is the calvarium of an old male, said to have come from the peninsula of Jandia in the extreme south of Fuerteventura. The skull is rather larger than average for Guanches and the muscular markings are indicative of a robust development. The frontal region is broad and high; the sagittal region shows a moderate convexity, as do also the temporal and occipital regions. The specimen is mesocephalic, chamaecephalic, and tapeinocephalic.

The sutures show a moderate serration. Obliteration has begun in the lateral portions of the coronal suture, while the sagittal and lambdoid sutures remain open. There are no Wormian bones in any of the sutures. The pterion is H-form, and parietal foramina are lacking. The mastoid processes are very large, but the brow-ridges show only moderate development.

A moderate nasion depression exists, and the nasal bridge is of medium height and breadth. The nasal aperture is narrow, and the index is leptorrhine. The lower borders of the nasal aperture are of medium definition, and there are no sub-nasal grooves. The orbits are mesoconch, and the malars and zygomata are very large. The face is broad and short.

The teeth are deeply worn and many have been lost in life. Consequent alveolar absorption makes it impossible to determine the presence or absence of alveolar prognathism. There is no mandible. The upper third molars have failed to erupt, and there are a number of alveolar abscesses. The palate is small and elliptical in shape. The glenoid fossae are deep, with a moderate development of the postglenoid tubercles. The styloid processes are large; the middle lacerate foramina are of medium size, and the petrous portions of the temporal bones show an average depression. There are no pterygo-spinous foramina and no dehiscences in the floor of the auditory meatus.

The second skull from Fuerteventura (No. 728) is also the calvarium of an old male and is large in size. The frontal region is broad, low, and retreating. The sagittal region shows a moderate convexity; the temporal regions are depressed, and the occiput is protuberant. The calvarium is dolichocephalic, chamaecephalic, metriocephalic.

The sutures show a moderate serration and the sagittal and lambdoid sutures are very largely obliterated externally, while occlusion in the coronal suture is confined to the parts

in the pterion region. The skull has no Wormian bones. The pterions are of the K-shape, and there is one medium parietal foramen. The mastoids are of medium size, but the brow-ridges are very large. A moderate nasion depression exists, in conjunction with a nasal bridge of medium dimensions and a medium aperture. The nasal index is leptorrhine. The lower borders of the nasal aperture are dull, but there are no sub-nasal grooves. Orbits are chamaeconch, and there is no infraorbital suture. The molars and zygomata are tremendously developed; the whole face is broad and of considerable height, so that the upper facial index is mesene.

The mandible is missing, and all of the teeth have been lost in life and the alveolar processes absorbed. There are traces of alveolar abscesses. The shape of the palate is indeterminate. The glenoid fossae are deep, with a moderate postglenoid process in each. Distinct arthritic conditions are observable in this region. Styloids are large, the lacerate foramina are of medium size, and the petrous portions of the temporal bones show a medium depression. There are indications of an incomplete pterygo-spinous foramen.

La Palma. Calvarium No. 756 was found in a burial cave (Cueva de los Bermajales) near Fuencaliente, at the extreme southern tip of the island of La Palma. It is a very large skull of a middle-aged male. The frontal region is broad and of medium height. The sagittal region shows a moderate convexity. The temporal region is flat or even compressed, and the occiput shows a medium convexity. The calvarium is dolichocephalic (length-breadth index 70.7); it is orthocephalic (73.7), and akrocephalic (104.3).

The serration of the sutures is simple and all of them are open. No Wormian bones are present, and the pterions are H-shaped. There are two medium-sized parietal foramina, and the mastoids are very large. The supraorbital ridges are of great size. There is a moderate nasion depression and the nasal bridge is of medium breadth and height. The nasal aperture is rather wide and the lower borders are indistinct. Very large subnasal grooves are present, and the nasal index (50.9) is on the extreme upper limit of mesorrhiny. The orbits are unusually low and broad, and the infraorbital sutures are complete on both sides. The suborbital fossae are of moderate depth. The malars and zygomata are very large. The upper facial index is mesene (52.77).

A slight degree of alveolar prognathism is observable, and the teeth, though well worn, are of good quality. The mandible is missing. The palate is elliptical in shape, with a high roof. The glenoid fossae are deep, with very large postglenoid processes. The middle lacerate foramina are of medium size and the petrous parts of the temporal bones are moderately depressed. A complete pterygo-spinous foramen is present on the right side, and there are no dehiscences in the tympanic bones.

This skull has a circular hole bored in the sagittal suture about 15 mm. behind bregma. The hole is 10 mm. in diameter at the bottom and 20 mm. at the top. It was evidently scraped immediately before death or after death. As the skeleton was found with clubs

and lances carefully arranged beside it, it is possible that we have to do with an incomplete trephining or an unsuccessful operation of some other kind.

These three crania fall well within the combinations of indices found in the Tenerife group. Fuerteventura No. 484 is meso-chamae-tapeinocephalic. This implies a medium width in relation to length, a low height in relation to length, and a low height in relation to breadth. Such a combination of vault indices occurs in 47 Tenerife males, or 18.6 per cent of the series. Fuerteventura No. 728 is dolicho-chamae-metriocephalic. This type occurs in 17 Tenerife males, or 6.5 per cent. The La Palma skull is dolicho-ortho-akrocephalic. This type occurs in 14 Tenerife males, or 5.5 per cent.

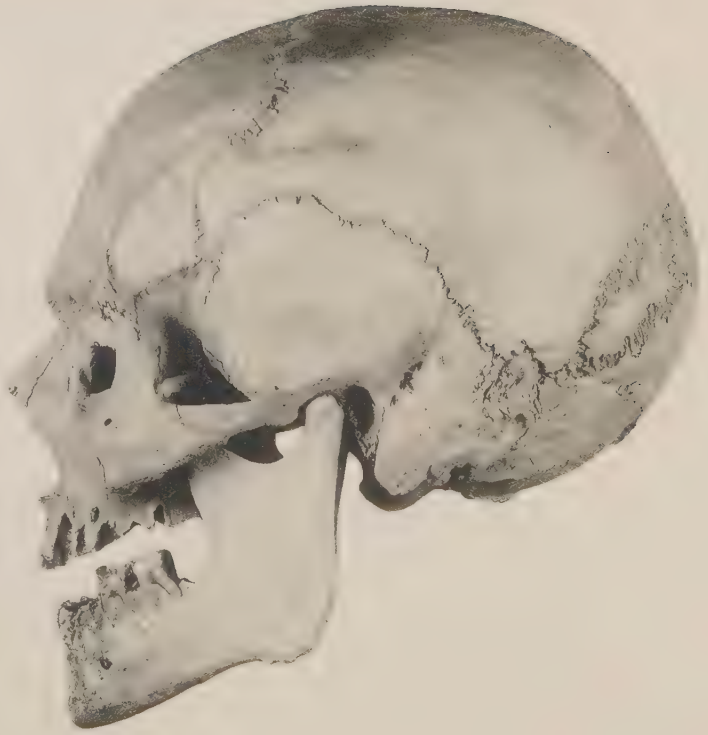


FIG. 1. ORTHOCEPHALIC, MESOGNATHOUS

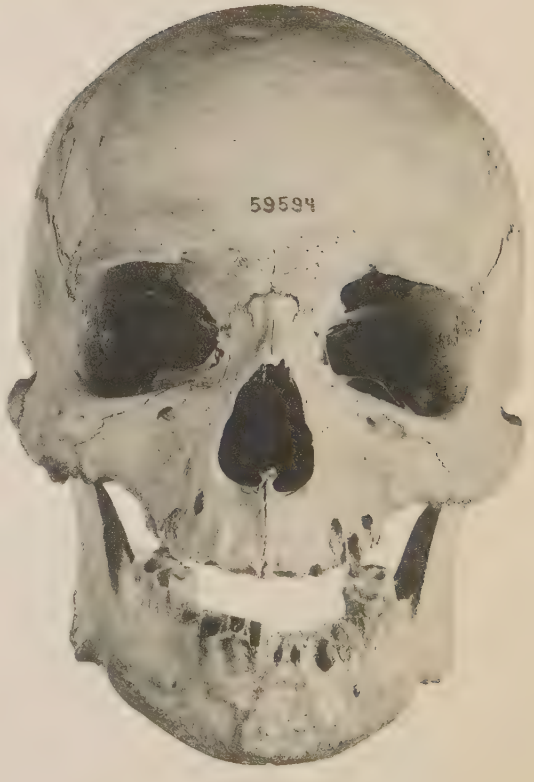


FIG. 2. METRIOCEPHALIC, EURYPROSOPIC, CHAMAECONCH, LEPTORRHINE

NO. 59594. TENERIFE MALE, "GUANCHE" TYPE

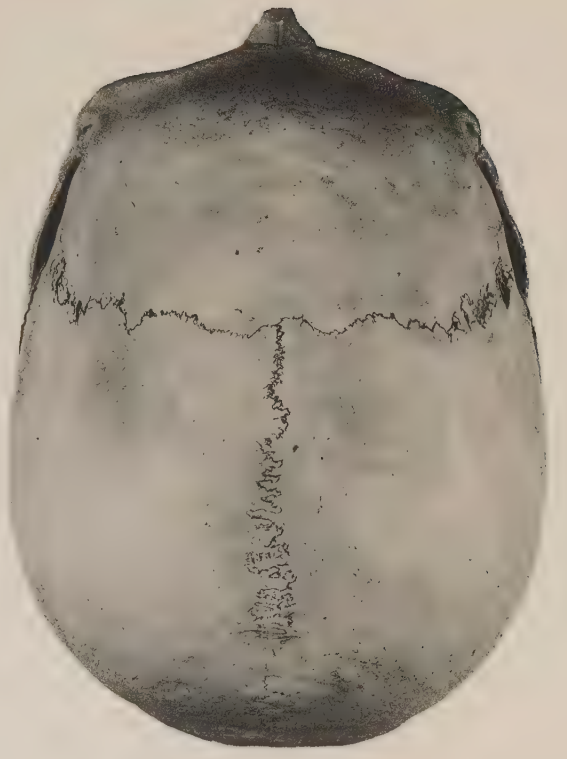


FIG. 1. MESOCEPHALIC

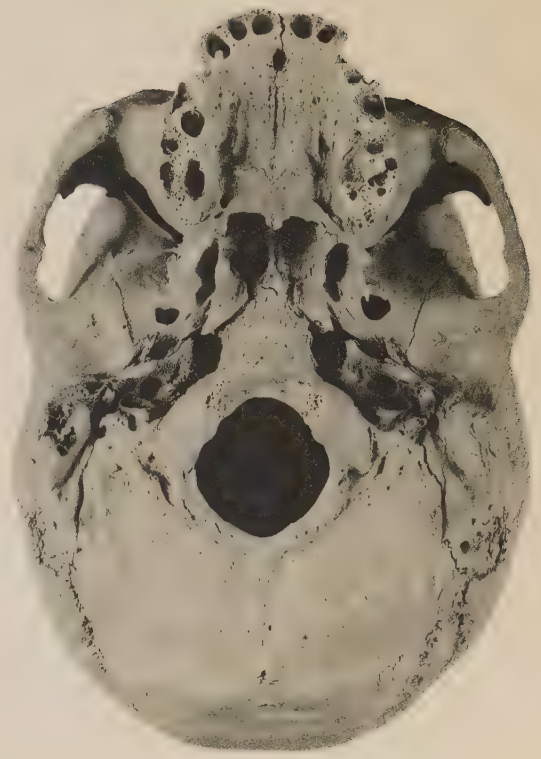


FIG. 2. BRACHYURANIC

No. 59598. TENERIFE MALE, "GUANCHE" TYPE

FIG. 1. ORTHOCEPHALIC, ORTHOGNATHOUS

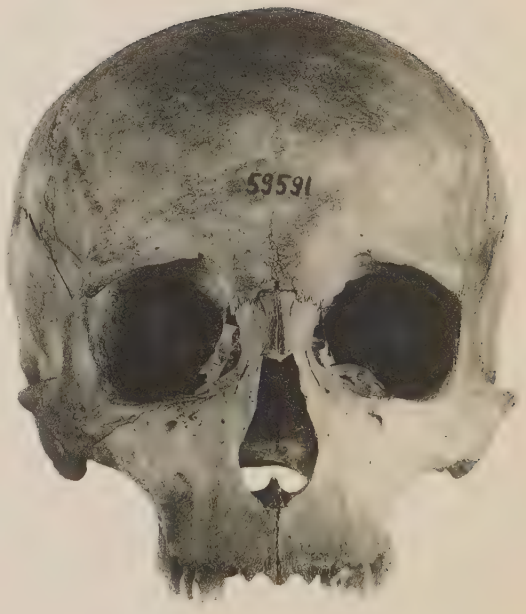


FIG. 2. TAPEINOCEPHALIC, MESENE, MESOCONCH, LEPTORRHINE

NO. 59591. TENERIFE MALE, "NORDIC-ALPINE" TYPE

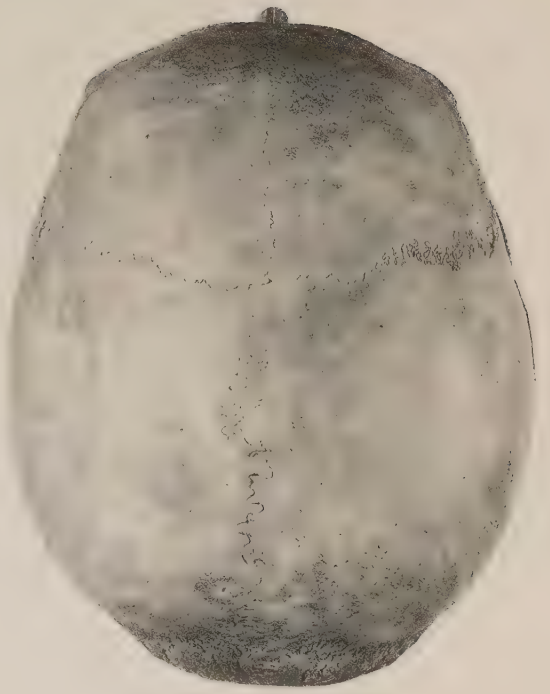


Fig. 1. Sub-brachycephalic

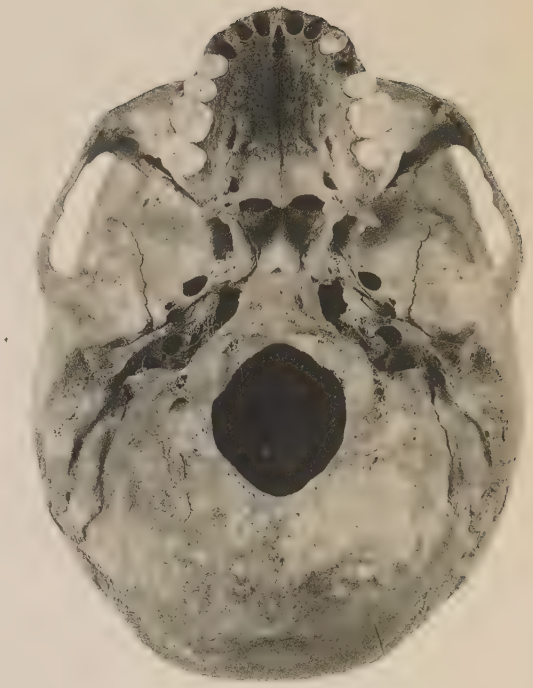


Fig. 2. Brachyuranic

No. 59591. Tenerife Male, "Nordic-Alpine" Type

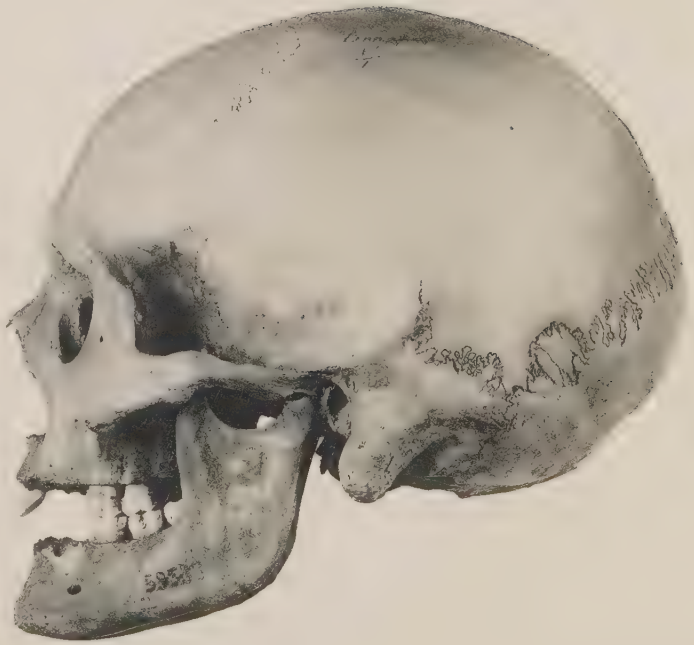


FIG. 1. ORTHOCEPHALIC, ORTHOGNATHOUS

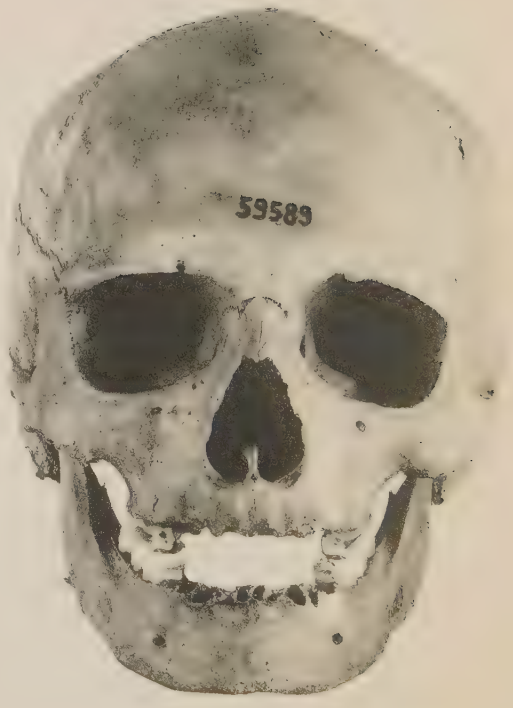


FIG. 2. TAPEINOCEPHALIC, EURYPROSOPIC, CHAMAECONCH, CHAMAERRHINE

No. 59589. TENERIFE MALE, SMALL "GUANCHE" TYPE

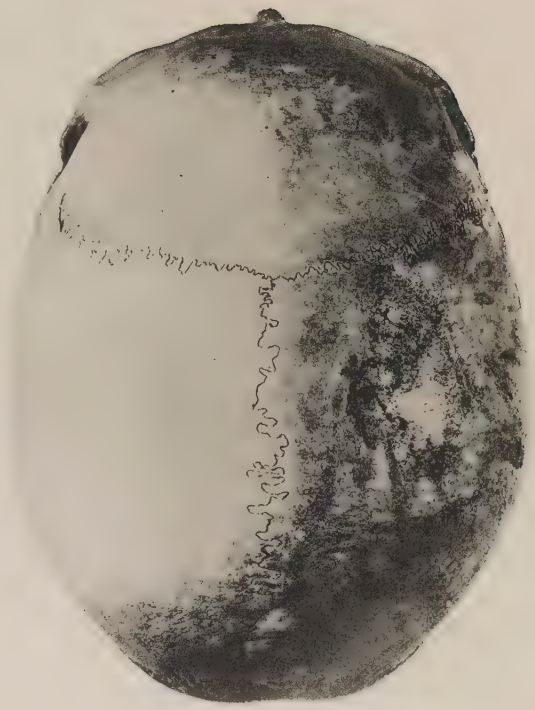


FIG. 1. SUB-BRACHYCEPHALIC

FIG. 2. BRACHYURANIC

No. 59589. TENERIFE MALE, SMALL "GUANCHE" TYPE

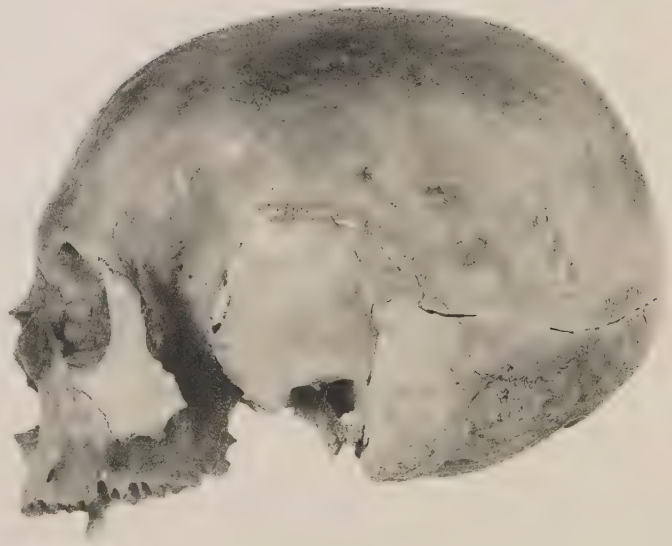


FIG. 1. ORTHOCEPHALIC ?, ORTHOGNATHOUS

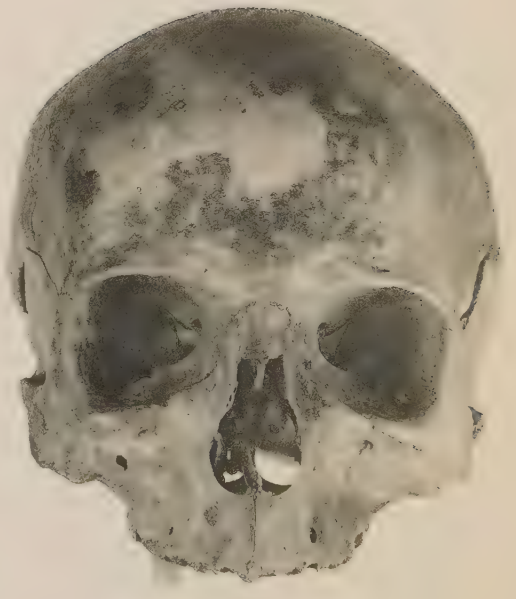


FIG. 2. LEPTENE, MESOCONCH, MESORRHINE

No. 59551. TENERIFE MALE, "MEDITERRANEAN" TYPE

FIG. 1. MESOCEPHALIC

FIG. 2. BRACHYURANIC

No. 59551. TENERIFE MALE, "MEDITERRANEAN" TYPE

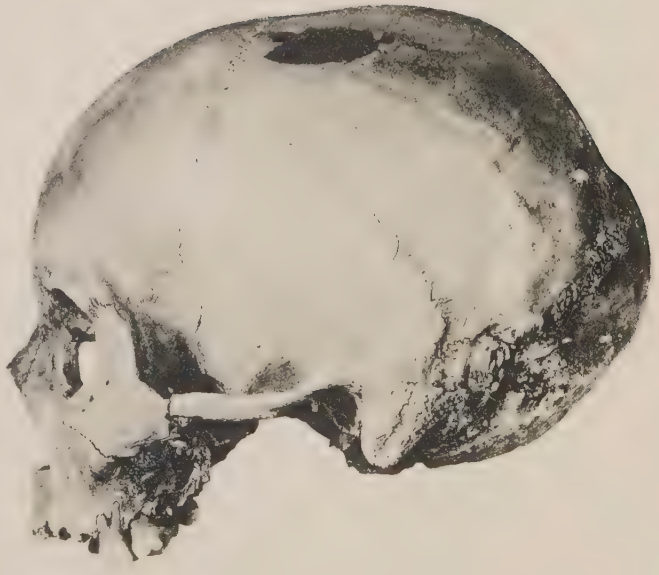


Fig. 1. Orthocephalic, Hyper-orthognathous

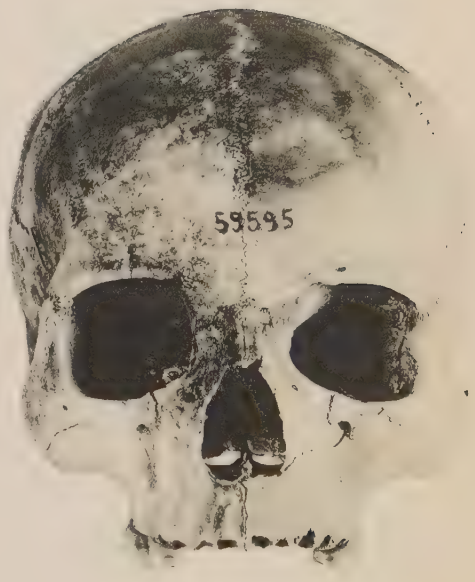


Fig. 2. Metriocephalic, Mesene, Mesoconch, Leptorrhine

No. 59595. Tenerife Female, "Guanche" Type

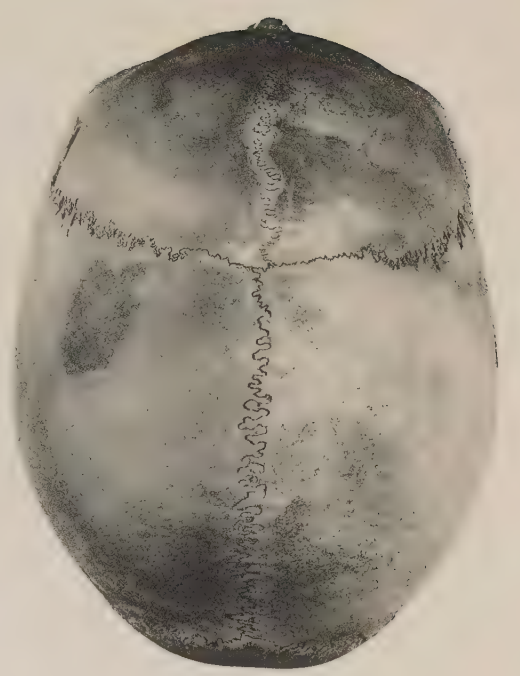


FIG. 1. MESOCEPHALIC

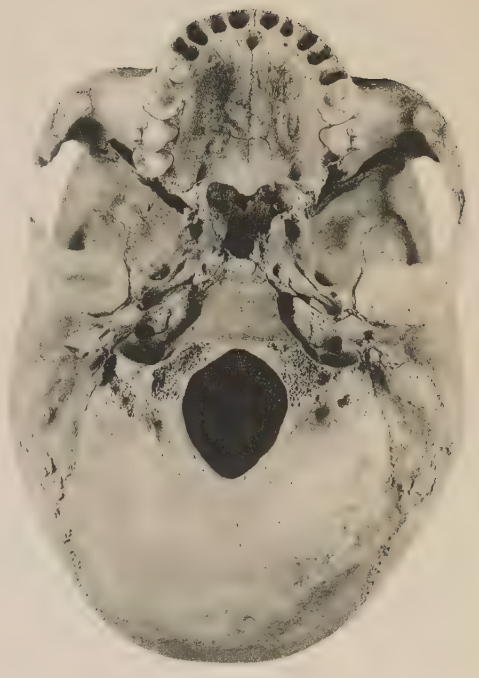


FIG. 2. HYPER-BRACHYURANIC

No. 59595. TENERIFE FEMALE, "GUANCHE" TYPE

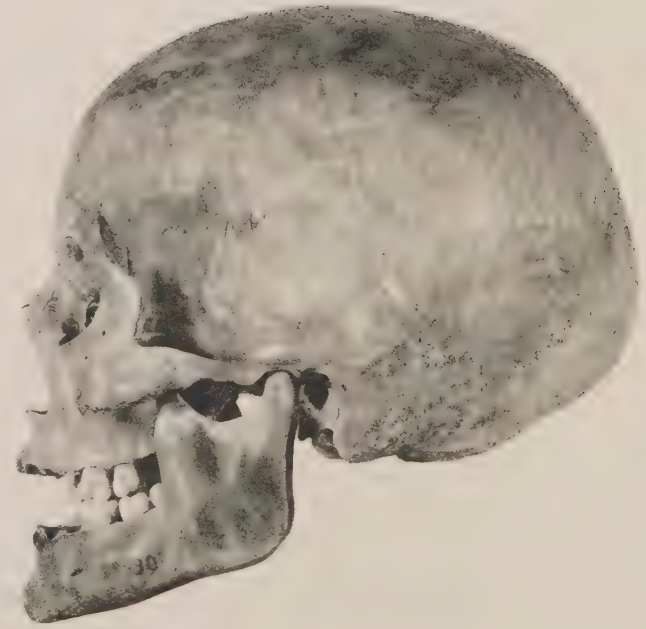


FIG. 1. ORTHOCEPHALIC, ORTHOGNATHOUS

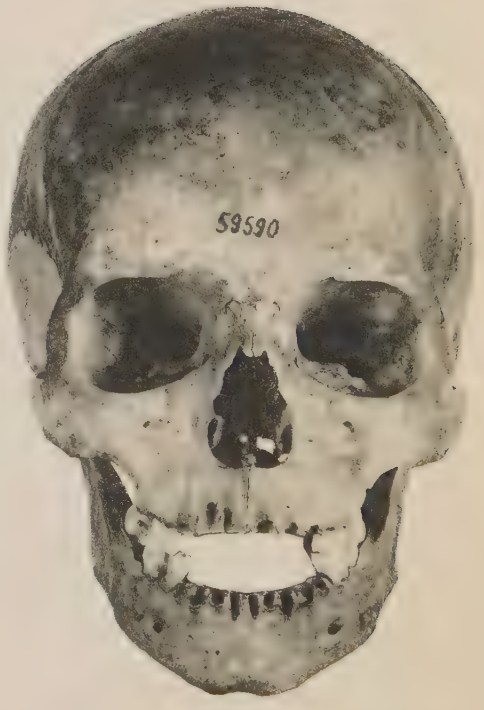


FIG. 2. METRIOCEPHALIC, MESENE, MESOCONCH, CHAMAERRHINE

NO. 59590. TENERIFE FEMALE, "ALPINE-MEDITERRANEAN" TYPE

Fig. 1. Sub-brachycephalic

Fig. 2. Brachyuranic

No. 59590. Tenerife Female, "Alpine-Mediterranean" Type

FIG. 1. MESOCEPHALIC

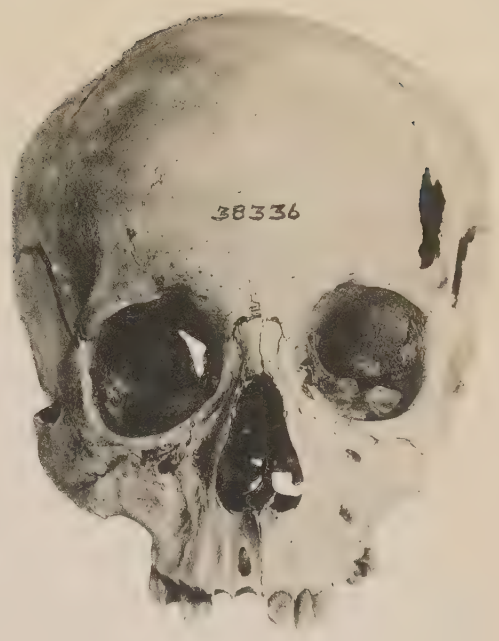


FIG. 2. HYPSICONCH, LEPTORRHINE

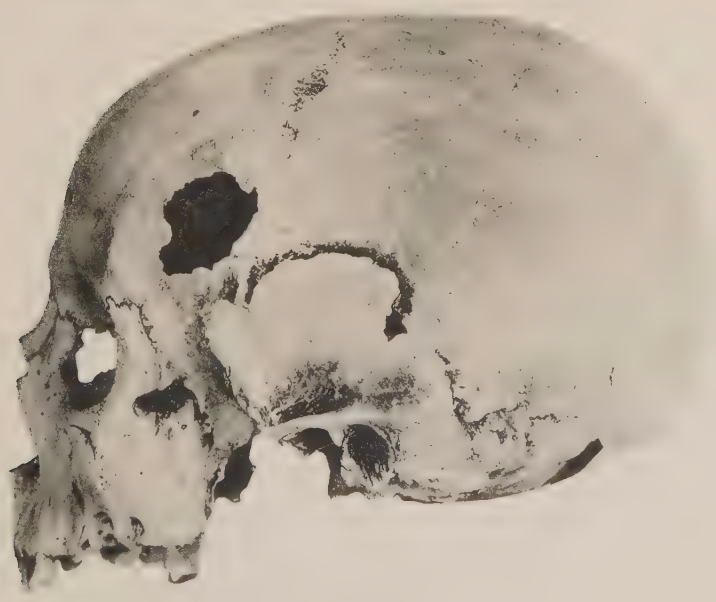


FIG. 3

ORTHOCEPHALIC (?), ORTHOGNATHOUS (?)

No. 38336. GRAN CANARIA MALE. "MEDITERRANEAN" TYPE

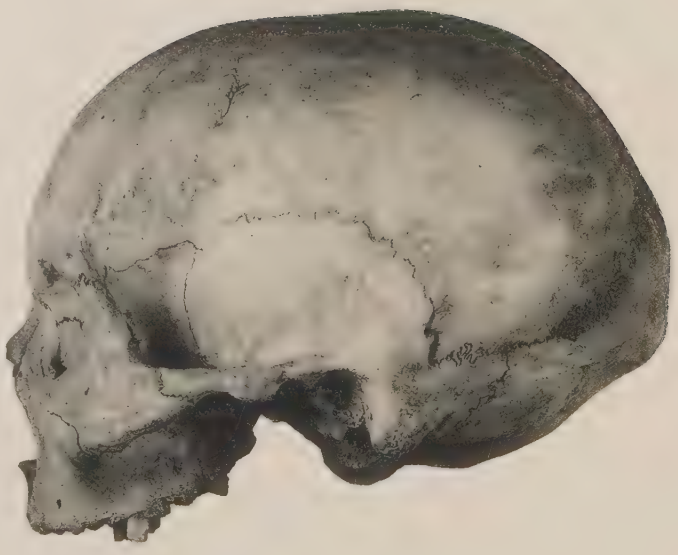


Fig. 1. Chamaecephalic, Hyper-orthognathous

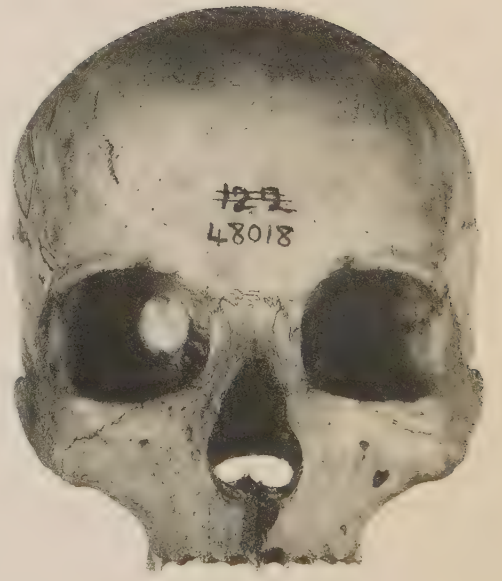


Fig. 2. Metriocephalic, Leptene, Mesoconch, Mesorrhine

No. 48018. Gran Canaria Female, "Mediterranean" Type

FIG. 1. DOLICHOCEPHALIC

FIG. 2. MESURANIC

No. 48018. GRAN CANARIA FEMALE

Trepanned Cranium, Bco. Herques, Tenerife

FIG. 1. MUMMIFIED LUMBAR COLUMN, SAN ANDRES, TENERIFE

FIG. 2. SACRAL HIATUS, SAN ANDRES, TENERIFE

FIG. 3. HUMERUS WITH SUPRACONDYLOID PROCESS, SAN ANDRES, TENERIFE

CHAPTER VII

COMPARISON OF TENERIFE CRANIA WITH THOSE OF OTHER PEOPLES

A. RECENT EUROPEAN AND NORTH AFRICAN CRANIA

In order to ascertain the affiliations of the Tenerife inhabitants with various racial stocks we may begin by comparing the means of cranial measurements and indices. The comparative data have been selected from North African and European peoples and, because of the presence of blonds among the ancient Guanches, I have chosen measurements of crania predominantly Nordic or with Nordic admixture and crania in which the Alpine element is absent or only feebly represented.

MEASUREMENTS AND INDICES OF THE CRANIAL VAULT

Length, breadth, height, and cranial module. Table 100 gives the means of the cranial diameters and the cranial module $\left(\frac{L+B+H}{3}\right)$ for various series. Let us first compare the Tenerife crania with the Germanic Alamanni and Burgundians of the fifth century whose skeletal remains have been exhaustively studied by Schwerz.[1] Unfortunately that writer fails to separate the measurements and indices of the two sexes in all of his tables, so that in the case of the cranial diameters we must utilize combined data.

From Table 100, it may be observed that our Tenerife male crania have somewhat longer glabello-occipital diameters, on the average, than do the combined series of Alamanni and Burgundians studied by Schwerz. This may be due to the inclusion of the smaller female crania in his means. The glabello-occipital length of Tenerife males is 185.9 mm., and of Alamanni and Burgundians from 183.2 mm. to 184 mm. If we take the mean glabello-occipital length of Tenerife males and females we find it to be 183.5 mm., which is precisely the mean of Swiss Alamanni. The average breadth of Tenerife male crania is 142.1 mm., and of Tenerife female crania 137.6 mm. The combined mean is 140 mm., which is almost 2 mm. less than the means of two series of Alamanni, but is approximately the same as the mean breadth of a combined series of Burgundians (140.3 mm.). The Tenerife mean of basion-bregma height for both sexes combined is 130.1 mm., whereas that for combined series of Alamanni and Burgundians ranges from 131.5 mm. to 132.8 mm. It is apparent

[1] F. Schwerz, 1912. Die Alamannen in der Schweiz. Eine anthropologische Studie. Zeitschr. f. Morphol. u. Anthrop., vol. 14, pp. 609–700.
1915. Die Völkerschaften der Schweiz von der Urzeit bis zur Gegenwart, Stuttgart.
1917. Anthropologische Untersuchung der Schädel aus dem alamannischen Gräberfelde von Augst, Archiv f. Anthrop., XLIII, pp. 270–300.

TABLE 100. Comparative Table of Measurements of the Cranial Vault

Group	Authority	Number	Length g. o.	Breadth max.	Height b. b.	Cranial module
Males:						
Tenerife	Hooton	247	185.9	142.1	131.9	152.9
Tenerife "Nordics"	Hooton	73	185.4	141.2	131.1	152.6
Tenerife modern	Lajard	25	185.3	138.5	136.1	153.3
Franks of Hainaut	Houzé	45	188.3	142.4	133.1	154.6
Merovingians of Muids, France	Hamy	26	188.0	142.0	133.0	154.3
Moorfields English	Macdonell	44	189.1	143.0	129.8	152.6
Whitechapel English	Macdonell	137	189.0	140.7	132.0	154.1
Merovingians of Boulonnais, France	Hamy	20	191.1	139.9	136.0	155.6
Graverow Saxons	Gildemeister	46	190.2	139.7	..	..
Scotch	Turner	?	187.0	149.0	132.0	156.0
Azores modern	Lajard	20	183.5	135.6	130.6	149.9
Spanish	Hoyos Sáinz	?	183.0	138.0	133.0	151.3
Females:						
Tenerife	Hooton	81	176.4	137.6	124.8	145.9
Tenerife modern	Lajard	25	177.9	135.2	131.4	148.6
Franks of Hainaut	Houzé	35	178.7	135.8	126.3	146.9
Merovingians of Muids, France	Hamy	10	177.0	145.0	132.0	151.3
Moorfields English	Macdonell	63	183.4	137.6	123.6	148.2
Whitechapel English	Macdonell	140	180.4	134.7	124.6	146.6
Merovingians of Boulonnais, France	Hamy	15	185.0	137.3	135.0	152.4
Graverow Saxons	Gildemeister	26	180.9	138.8	..	..
Scotch	Turner	?	179.0	138.0	126.0	147.6
Azores modern	Lajard	20	180.2	132.1	126.7	146.3
Spanish	Hoyos Sáinz	?	174.0	133.0	126.0	144.3
N. W. Tunis modern	Bertholot, Chantre	20	177.0	131.0	126.0	144.6
Tunis modern	Bertholot, Chantre	15	181.0	134.0	130.0	148.3
Males and Females:						
Tenerife	Hooton	344	183.5	140.0	130.1	151.2
Alamanni of Augst, Switzerland	Schwerz	?	184.0	141.7	132.8	152.8
Swiss Alamanni	"	?	183.5	141.8	132.3	152.5
Burgundians	"	?	183.2	140.3	131.5	151.7

that these Germanic peoples are distinguished from the Guanches of Tenerife by a slightly greater average cranial height.

We may next compare the Tenerife male, with respect to mean cranial diameters, with various series from Northwestern Europe in which Nordic blood predominates with more or less Mediterranean admixture and a dash of brachycephalic Alpine. For this purpose I have selected Graverow Saxons studied by Gildemeister;[1] the English series of Jacobean crania from Whitechapel and Moorfields, London, studied by Macdonell;[2] the Scotch series of Turner;[3] and two Merovingian series of Hamy.[4] The mean head length of Ten-

[1] J. Gildemeister, Ein Beitrag zur Kenntnis nordwestdeutscher Schädelformen. Archiv f. Anthrop. 1872, Bd. XI, pp. 25–64.

[2] W. R. Macdonell, A Study of the Variation and Correlation of the Human Skull, with Special Reference to English Crania; Biometrika, vol. 3, 1904, pp. 191–244. A Second Study of the English Skull with Special Reference to Moorfields Crania; Biometrika, vol. 5, 1906–1907, pp. 86–104.

[3] W. Turner, A Contribution to the Craniology of the People of Scotland, Trans. Royal Soc., Edinburgh, 1905, vol. 40, part 3, pp. 547–615. Here cited from R. Martin, Lehrbuch.

[4] E. T. Hamy, Matériaux pour servir à l'Anthropologie du Nord de la France, L'Anthropologie, vol. IV, 1893, pp. 513–534, vol. XIX, 1908, pp. 47–68.

erife males falls 4 mm. below that of the male Saxons of the Graverow series studied by Gildemeister. It is about 3 mm. less than the mean lengths of the Jacobean English series of London, and about 1 mm. less than that of the Scotch studied by Turner. The male crania of the Franks from the cemetery of Ciply, Hainaut, studied by Houzé,[1] exceed our Tenerife males in glabello-occipital length by more than 2 mm. Similar deficiencies of glabello-occipital length are shown by the Tenerife female series, when it is compared with the female series of Saxons, English, Franks, and Scots. In maximum breadth our Tenerife male series falls between the Moorfields and the Whitechapel English, being one millimeter less than the Moorfields males and one more than the Whitechapel males. The Graverow Saxons from Bremen have somewhat narrower crania. Our female crania have approximately the same mean width as the Saxon and Moorfields crania, but are about 3 mm. broader than the Whitechapel crania. The male Scotch crania of Turner's series average almost 7 mm. wider than our Tenerife series, but the Scotch females have substantially the same width as that of our female series. The basion-bregma heights of our Tenerife crania are very close to those of the Whitechapel crania, and not far removed from means of the other groups here considered.

I have also compared our Tenerife crania with certain series of presumably Mediterranean race origin — namely, a series of modern crania from Tenerife and Gran Canaria, and another from the Azores, studied by Lajard [2]; a series of Spanish crania published by Hoyos Sáinz [3]; and a Portuguese series by Ferraz de Macedo [4]; as well as various North African series published in the monumental work of Bertholon and Chantre.[5] The modern Orotava male crania from the burial crypts of the church of Orotava, Tenerife, are about the same length as our Guanche series, or a trifle shorter; but they are much narrower and higher. The same differences obtain in the female series. The same is in general true of the Spanish and Azorean series. The crania are considerably smaller than our Tenerife Guanches; they are shorter and narrower, but are higher.

We may summarize this consideration of the means of the three cranial diameters by the statement that our Tenerife crania show close affinities to certain mixed Nordic groups such as the Swiss Alamanni and Burgundians. They approximate more closely to these than they do to the London English, who were probably principally Nordic and Mediterranean. The Tenerife crania have not the great length of the supposedly pure Nordic Graverow crania, nor of the English crania. In breadth and height they do not differ significantly from these groups. The Tenerife crania are not at all close to modern crania

[1] E. Houzé. Les Francs de la Nécropole de Ciply, Hainaut; Bull. et Mém. de la Soc. D'Anthrop. de Bruxelles, vol. XXXII, 1913, pp. cix–cxl.

[2] J. Lajard, La Race Ibère (Crânes des Canaries et des Açores; Bull. de la Soc. d'Anthrop. de Paris, s. 4, vol. 3, 1892, pp. 294–326.

[3] L. de Hoyos Sáinz et T. Aranzadi, Notes préliminaires sur les "Crania Hispanica." Bull. et Mém. Soc. d'Anthropologie de Paris, s. 6, vol. 4, 1913, no. 1, pp. 81–94.

[4] F. Ferraz de Macedo. Lusitanos e romanos em Vila Franca de Xira. Lisboa, 1893. Cited from Lajard, op. cit.

[5] Bertholon and Chantre, op. cit.

of Mediterranean race origin from the Canaries, the Azores, and Spain. Our Guanche series is composed of larger skulls, with greater length, breadth, and less height than we find in the Mediterranean race series of modern times.

TABLE 101. Comparative Table of Means of Arcs, Circumference, and Minimum Frontal Diameter

Group	Authority	Horizontal circumference	Nasion-opisthion arc	Transverse arc	Minimum frontal diameter
Males:					
Tenerife	Hooton	522.1	368.9	304.0	96.1
Tenerife modern	Lajard	518.8	374.7	300.8	98.5
Merovingians of Upper Normandy	Hamy	529.0	...	...	..
Merovingians of Muids	Hamy	532.0	378.0	304.0	98.0
Merovingians of Boulonnais	Hamy	528.0	379.0	309.0	97.0
Merovingians of Alsace	Collignon	526.7	375.3	296.4	..
Merovingians of Chelles	Collignon	523.5	375.6	...	..
Moorfields English	Macdonell	527.1	378.5	305.4	98.5
Whitechapel English	Macdonell	524.2	377.1	307.9	98.0
Long Barrow English	Schuster	534.9	377.1	321.8	98.9
Graverow Saxons	Gildemeister	532.6	377.0	...	97.2
Portuguese modern	Ferraz de Macedo	517.6	377.6	...	..
Azores modern	Lajard	514.7	374.2	300.1	93.0
Females:					
Tenerife	Hooton	498.5	352.8	291.0	91.8
Tenerife modern	Lajard	500.8	...	290.3	94.5
Merovingians of Upper Normandy	Hamy	506.0	...	...	..
Merovingians of Muids	Hamy	507.0	366.0	300.0	93.0
Moorfields English	Macdonell	512.7	365.6	293.1	95.2
Whitechapel English	Macdonell	503.8	362.8	294.0	93.1
Azores modern	Lajard	504.4	...	290.0	91.2
Males and Females:					
Tenerife	Hooton	516.2	364.2	300.7	95.1
Alamanni of Switzerland	Schwerz	524.6	372.8	309.1	..
Burgundians of Switzerland	Schwerz	531.0	372.4	309.3	..

Cranial arcs and circumference; minimum frontal diameter. Table 101 shows that the Tenerife crania have somewhat smaller mean circumference and arcs than any of the series which are supposed to be of predominantly Nordic race. The mean circumference (above brow-ridges) for Tenerife males and females combined, is 516.2 mm. It is quite possible that some of the series adduced for comparison were measured with the inclusion of the brow-ridges. This would tend to make their means somewhat larger. As it is, the combined mean for the Tenerife series is 8.4 mm. less than that for the combined series of Swiss Alamanni. The males of the Tenerife series average from 1.4 mm. to 4.7 mm. less than Merovingians measured by Collignon; they are also slightly smaller than the London series from Whitechapel, and 5 mm. smaller than the Moorfields series. The Burgundians, the Graverow Saxons, and the Long Barrow English show considerably larger circumferences. On the other hand, the Tenerife males show cranial circumferences significantly larger than the Mediterranean race series from the Canaries, the Azores, and Portugal. Tenerife females show smaller circumferences than the females of any of the comparative

series. They are, however, very close to the means of Whitechapel English and modern Mediterranean race crania.

Again, the nasion-opisthion arc in both sexes of Tenerife crania is smaller than in any of the series with which they are compared. These differences are more marked than in the case of the circumference.

The transverse arcs in our Tenerife series fall a little below the means of the Nordic groups with which they are compared, but, on the whole, the approximation is comparatively close. The Tenerife series exceeds the means of all of the Mediterranean race groups with which it is compared, except the Long Barrow English (if these, indeed, are a Mediterranean race). The Long Barrow English measured by Schuster show a mean transverse arc of 321.8 mm. — almost 18 mm. more than our Tenerife males.

The minimum frontal diameter of our Tenerife crania shows a mean considerably below that of any of the Nordic groups and approximates to that found in the Mediterranean series. This holds for both sexes.

TABLE 102. Comparative Table of Indices of the Cranial Vault

Group	Authority	Length-breadth	Length-height	Breadth-height
Males:				
Tenerife	Hooton	76.0	70.5	93.5
Tenerife "Nordics"	Hooton	76.2	70.3	92.3
Alamanni of Augst	Schwerz	77.3	71.6	..
Franks of Hainaut	Houzé	75.3	70.6	94.0
Merovingians				
Upper Normandy	Hamy	75.6	68.9	92.1
Boulonnais	Hamy	73.2	71.2	97.2
Muids	Hamy	75.5	70.7	92.9
Graverow Saxons	Gildemeister	73.6	71.6	..
Tenerife modern	Lajard	74.6	71.1	98.5
Carthaginians	Bertholon and Chantre	75.0	70.5	90.0
Whitechapel English	Macdonell	74.3	70.0	..
Moorfields English	Macdonell	75.5	68.4	..
Azores modern	Lajard	73.8	71.1	96.3
Portuguese modern	Ferraz de Macedo	75.0	72.2	97.4
Beni-Menacer	Broca	74.0	75.0	101.0
Tunis modern	Bertholon and Chantre	76.0	73.0	97.0
Females:				
Tenerife	Hooton	77.6	70.3	90.3
Franks of Hainaut	Houzé	76.3	70.4	92.2
Merovingians				
Upper Normandy	Hamy	79.1	73.6	93.0
Boulonnais	Hamy	74.2	73.0	98.3
Muids	Hamy	80.2	74.6	91.0
Graverow Saxons	Gildemeister	75.2	71.4	..
Tenerife modern	Lajard	74.4	72.2	96.2
Carthaginians	Bertholon and Chantre	75.8	71.8	94.7
Tunis modern	Bertholon and Chantre	74.3	71.7	96.4
Moorfields English	Macdonell	75.0	67.2	..
Whitechapel English	Macdonell	74.7	69.1	..
Males and Females:				
Tenerife	Hooton	76.8	70.9	92.4
Burgundians of Switzerland	Schwerz	76.8	72.2	93.7
N. W. Germans, 9th to 14th centuries	Gildemeister	76.0	70.2	93.0

Indices of the cranial vault. Table 102 gives the means of the vault indices for various European and North African groups. In regard to the length-breadth or cranial index, one may notice that the groups presumably almost pure Nordic, or almost pure Mediterranean, show somewhat lower means than our series. On the other hand, the groups which are predominantly Nordic with some Alpine or other admixture show means which are very close to the subdolichocephaly of our series. In the length-height indices of these various groups there is again a fairly close agreement. The Jacobean English show somewhat lower means than those of our group, and the Mediterranean and Alpine mixtures somewhat higher indices. It is apparent that dolichocephaly tends to be associated with chamaecephaly. The breadth-height index is much more variable in the series between which and the Tenerife crania we are instituting comparisons. Here, again, the means of our Tenerife series coincide almost exactly with those of the Alamanni, Burgundians, Franks, and other Germanic peoples of more or less mixed race. Most of the Mediterranean race groups show decidedly higher indices than our Tenerife series and other series in which Nordic elements seem to predominate.

TABLE 103. Comparative Table of Length-Breadth Index Percentages

	Sex	Dolichocephalic (x–74.9)	Mean	Mesocephalic (75–79.9)	Brachycephalic (80–x)	Total
Tenerife	♂	25.7	76.0	67.3	6.9	245
Tenerife "Nordics"	♂	30.14	76.2	61.64	8.22	73
Franks of Hainaut	♂	52.3	75.3	38.6	9.1	44
Tenerife	♀	6.1	77.6	75.3	18.5	81
Franks of Hainaut	♀	40.0	76.3	40.0	20.0	35
Alamanni of Augst	♂ + ♀	19.0	77.9	52.0	29.0	174
Alamanni of Switzerland	♂ + ♀	40.0	75.7	45.0	15.0	101
Germans of N. W. Switzerland	♂ + ♀	30.0	..	39.0	30.0	..
N. W. Germans of 9th–14th cent.	♂ + ♀	34.0	76.0	49.0	15.0	103
Alamanni of Baden	♂ + ♀	49.0	75.0	38.0	13.0	76
Alamanni of Bavaria	♂ + ♀	42.0	75.2	45.0	13.0	60
Burgundians	♂ + ♀	27.0	76.8	51.0	22.0	99
Bavarian Graverow	♂ + ♀	43.6	..	45.0	9.8	71
Tenerife	♂ + ♀	20.8	76.4	69.3	9.8	344

The divisions of cranial series into index groups are of value in the analysis of the constituency of the series with respect to race. The arithmetic mean, even when accompanied by its probable error and standard deviation, is a very deceptive and unreliable basis for judging racial affiliation. Provided that we do not regard the arbitrary divisions of index seriations as necessarily coincident with biological or racial forms, such divisions afford a most convenient method of grouping seriations for the purpose of analysis. Unhappily it has been the custom of most anthropologists to give raw means, unaccompanied by any indications of their variabilities. Index divisions are most often utilized merely as a terminology for the classifications of means.

Table 103 shows the composition, according to divisions of the length-breadth index, of Tenerife crania, and of certain other groups of crania, mostly of predominantly Nordic

origin, which show fairly close agreement with our series in respect to the means of the three principal vault indices. It is apparent that the Tenerife series is quite differently constituted from any of the other series tabulated. The Tenerife crania include a much larger proportion of mesocephals than the other groups, and proportionately fewer brachycephals.

Most of the series of crania of historic Germanic peoples show both larger proportions of dolichocephals, on the one hand, and larger proportions of brachycephals on the other. There are two possible explanations for the differences in composition between these groups and our Tenerife series. The first is that the Tenerife population is of relatively pure stock racially, and is an original mesocephalic group. The dolichocephalic and brachycephalic elements in the ancient Tenerife population would then represent merely extreme variants of the prevalent type, or possibly that portion of the population which has been altered by admixture. If this view is accepted we may dismiss the resemblances to Germanic peoples in the means of measurements and indices of our Tenerife population as merely accidental and of no significance as regards racial connection. Elsewhere in this investigation (p. 191), I have discussed this possibility fully, and for the moment it may be dismissed. The other point of view regards the mesocephals as primarily due to mixtures of brachycephals with dolichocephals or of small dolichocephals with large dolichocephals. According to this view our Tenerife population would represent the result of long-continued mixture resulting in an extraordinarily large proportion of hybrid mesocephals. In view of the isolated position of this island people it is not at all improbable that originally diverse racial elements have become so thoroughly blended as to produce a fairly homogeneous pan-mixture. On the other hand most of the Germanic groups here compared with the Tenerife people, represent recent mixtures of Nordic peoples with other racial stocks, in territories in which the Nordics were newcomers. There is, moreover, no factor of geographical isolation impelling race mixture in the case of the Germanic peoples of Europe here adduced for comparison.

The combined sexes in Tenerife give percentages as follows: dolichocephals 20.8 per cent, mesocephals 69.3 per cent, brachycephals 9.8 per cent. The closest approximation to such distribution is in the combined group of the Alamanni of Augst, which comprises 19 per cent of dolichocephals, 52 per cent of mesocephals, and 29 per cent of brachycephals.

Table 104 shows the distribution of the length-height index in the Tenerife crania compared with the distributions in certain Germanic peoples. When compared with the ancient Germanic series from Switzerland it may be seen that the Tenerife crania show more chamaecephals and orthocephals, but far fewer hypsicephals. When compared with the more purely Nordic Franks of Belgium, the Tenerife crania show a marked deficiency of chamaecephals and a great excess of orthocephals. Yet the means of the Guanches and the Franks are practically identical. This is another illustration of the danger of judging racial affiliation on the basis of the arithmetic mean. The indications are that the somewhat higher average of the length-height index in the old Germanic Swiss population is due to a larger admixture of brachycephals than is found among the Franks, or among the

TABLE 104. Comparative Table of Length-Height Index (Percentages)

	Sex	Chamaecephalic (x–69.9)	Orthocephalic (70–74.9)	Mean	Hypsicephalic (75–x)	Total
Tenerife	♂	33.5	61.5	70.5	5.0	239
Tenerife "Nordics"	♂	31.0	62.0	70.3	7.0	71
Franks of Hainaut	♂	72.7	18.2	70.6	9.1	33
Tenerife	♀	32.9	63.3	70.3	3.9	78
Franks of Hainaut	♀	51.7	24.1	70.4	24.1	29
Alamanni of Augst	♂ + ♀	22.0	59.0	71.6	19.0	120
Burgundians	♂ + ♀	22.0	49.0	72.2	29.0	..
Germans of N. W. Switzerland	♂ + ♀	26.0	57.0	..	17.0	..
Franks of Hainaut	♂ + ♀	62.9	20.9	..	16.1	62
Tenerife	♂ + ♀	33.4	61.8	..	4.7	317

Guanches. The Franks include more brachyhypsicephals than do the Guanches, but the mean comes out practically the same, because of the very large preponderance of chamaecephals in the Franks, and the equally great proportion of orthocephals among the thoroughly mixed Guanches.

TABLE 105. Comparative Table of Breadth-Height Index (Percentages)

	Sex	Total	Tapeinocephalic (x–91.9)	Metriocephalic (92–97.9)	Akrocephalic (98–x)	Mean
Tenerife	♂	239	38.5	53.1	8.3	93.5
Tenerife "Nordics"	♂	26	37.14	50.0	12.9	92.3
Franks of Hainaut	♂	33	33.3	45.4	21.2	94.0
Tenerife	♀	79	69.6	27.8	2.5	90.3
Franks of Hainaut	♀	25	48.0	32.0	25.0	92.2
Carthaginians	♂ + ♀	114	38.1	43.8	16.5	92.1

The divisions of the breadth-height index show the difference in composition of the Tenerife series, and the Franks of Hainaut and ancient Carthaginians. Particularly noticeable is the paucity of akrocephals among the Tenerife crania. Attention should be called also to the overwhelming tapeinocephaly of the Tenerife female crania as contrasted with the males from that island. The similarity in the distribution of the selected group of Tenerife males called "Nordics," and the combined male and female series from Carthage, is striking, but probably not significant. The Carthaginian series has been added to the table because of the general scarcity of comparable data. The scarcity of akrocephals among the Tenerife crania is due to the prevalence of a relatively and absolutely small basion-bregma height.

MEASUREMENTS AND INDICES OF THE FACE

Upper facial diameters and index. In the table above, the means of the upper facial diameters and of the upper facial index show the position of our Tenerife crania with respect to certain series of European skulls. The mean bizygomatic diameter of Tenerife males is slightly greater than that of Jacobean English, modern Spanish, and modern Tenerifians. It is almost identical with the means of Franks of Belgium and of modern Scotch. The Long Barrow English show a somewhat higher mean, as do the Neolithic

TABLE 106. Comparative Table of Means of Facial Diameters and Upper Facial Index

	Sex	Bizygomatic diameter	Nasion-Alveon diameter	Upper facial index
Tenerife	♂	132.2	69.7	52.1
Tenerife "Nordics"	♂	131.2	71.4	54.5
Franks of Hainaut	♂	132.0	86.2	65.0
English of Moorfields	♂	129.0	68.1	52.8 [1]
English of Whitechapel	♂	130.0	70.2	54.0 [1]
Long Barrow English	♂	134.0	69.9	52.2 [1]
Scotch	♂	132.2	71.6	54.9 [1]
Spanish (Hoyos Sáinz)	♂	127.5	71.5	55.5
Orotava modern	♂	130.6	67.8	51.1 [1]
Tenerife	♀	121.8	63.7	51.8
Franks of Hainaut	♀	122.4	75.0	61.2
English of Moorfields	♀	122.0	64.1	52.6 [1]
English of Whitechapel	♀	120.3	65.9	54.8 [1]
Scotch	♀	121.5	67.0	55.1 [1]
Spanish	♀	118.5	67.0	56.5 [1]
Orotava modern	♀	123.2	64.9	53.5 [1]
Tenerife	♂ + ♀	129.4	67.6	52.0
Alamanni of Augst	♂ + ♀	131.0	69.0	54.0
Alamanni of Switzerland	♂ + ♀	131.1	69.1	53.4
Burgundians	♂ + ♀	128.0	69.0	54.1
Neolithic Swiss	♂ + ♀	133.1	66.7	52.3

[1] Index of the means rather than mean index and hence only approximately comparable.

Swiss. The Tenerife females occupy an approximately similar position to that of the males, when compared with the females of the corresponding groups. Judging from the means of the combined sexes, the Swiss Alamanni seem to have had slightly broader faces, but it is highly probable that many of these differences would prove to be insignificant if they were considered in relation to their probable errors.

In respect to upper facial height, the Tenerife crania are very close to the English, a little below the Scotch, and very far below the Belgian Franks. But these Belgian Franks, studied by Houzé, have, so far as I can ascertain, the longest faces ever recorded. They probably represent relatively pure Nordics of the early Merovingian period. The Tenerife females have relatively and absolutely shorter faces than the males — an usual sex difference.

TABLE 107. Comparative Table of the Divisions of the Upper Facial Index (Percentages)

	Sex	Euryene (x–49.9)	Mesene (50–54.9)	Leptene (55–x)	Mean	Total
Tenerife	♂	17.3	59.8	22.9	52.1	214
Tenerife "Nordics"	♂	1.5	52.3	46.1	54.5	65
Tenerife	♀	25.0	48.4	26.5	51.8	64
Tenerife	♂ + ♀	19.1	57.2	23.7	52.0	278
Alamanni of Augst	♂ + ♀	11.0	41.0	47.0	54.0	82
Northwest Germans (9th—14th cent.)	♂ + ♀	11.0	52.0	34.0	?	?
Burgundians	♂ + ♀	9.0	47.0	43.0	54.1	?
Alamanni of Switzerland	♂ + ♀	18.0	42.0	40.0	53.4	?

In the means and distribution of the upper facial index the Tenerife crania diverge from the long-faced Nordics and the narrow-faced Mediterraneans. The subgroup of Tenerife males designated " Nordics " has a mean almost identical with those of the Whitechapel English and the Burgundians. None of the groups of predominantly Nordic or Mediterranean race approach the astounding mean of the hyperleptene Franks of Hainaut (65.0 in the case of males and 61.2 in the case of females). These Franks of Ciply seem to have been the Nordics *par excellence!*

Table 107 shows the composition of our Tenerife series in subdivisions of the upper facial index. A higher percentage of euryene, or short, broad-faced crania, and a lower percentage of leptene crania, distinguish the Guanches from the Germanic peoples with whom they are compared. Unfortunately few data are available for this comparative table.

Nasal diameters and nasal index.

TABLE 108. Comparative Table of Means of Nasal Diameters and Nasal Index

	Sex	Nasal Height	Nasal Breadth	Nasal Index
Tenerife	♂	50.8	24.1	47.5
Tenerife "Nordics"	♂	..	..	45.6
Franks of Hainaut	♂	55.1	24.2	43.9
Scotch	♂	53.5	23.1	38.9
English of Moorfields	♂	50.4	24.0	47.6
English of Whitechapel	♂	51.2	24.3	47.5
Spanish	♂	51.0	24.0	46.0
Portuguese	♂	52.2	23.2	44.4
Orotava modern	♂	49.8	24.8	49.5
Azores	♂	49.6	23.0	46.4
Tenerife	♀	46.4	23.2	49.6
Franks of Hainaut	♀	50.9	22.7	44.6
Scotch	♀	49.4	22.1	44.4
English of Moorfields	♀	48.0	23.4	48.7
English of Whitechapel	♀	48.7	23.2	47.8
Spanish	♀	49.0	23.5	47.0
Portuguese	♀	49.1	22.3	45.4
Orotava modern	♀	49.2	24.0	49.5
Tenerife	♂ + ♀	49.7	23.8	48.0
Alamanni of Augst	♂ + ♀	51.0	24.0	47.0
Alamanni of Switzerland	♂ + ♀	51.0	24.0	47.0
Burgundians	♂ + ♀	52.0	24.0	46.8
Neolithic Swiss	♂ + ♀	47.7	23.2	49.3

In nasal height the Tenerife crania fall below the means of all of the predominantly Nordic people here adduced for comparison. It is true that the Guanches have, in the case of the males, a mean nasal height falling between the two series of London English, but these English undoubtedly have a very large Mediterranean race admixture and, in the case of the Moorfields series, probably an Alpine element also. The nasal heights of our Tenerife series are also inferior to those of the Mediterranean Spanish and Portuguese.

The Tenerife males have a mean nasal index that is on the lower border of mesorrhiny. This is approximately the same as the means found for the two series of London English.

Franks, Alamanni, Burgundians, Scotch, Portuguese, and Spanish are frankly leptorrhine. So are also the Tenerife males of the subgroup called " Nordic." In the case of both males and females of Tenerife the mesorrhiny is clearly due to the short length of the nose rather than to its breadth, which is small. The short nasal length is in its turn occasioned by the small height of the face, which is a marked characteristic of the Tenerife series taken as a whole.

TABLE 109. Comparative Table of Divisions of the Nasal Index (Percentages)

	Sex	Leptorrhine (x–46.9)	Mesorrhine (47–50.9)	Chamaerrhine (51–x)	Mean	Total
Tenerife	♂	42.0	36.0	22.0	47.5	250
Tenerife "Nordics"	♂	65.8	26.0	8.2	45.6	73
Franks of Hainaut	♂	77.8	16.7	5.0	43.9	36
Tenerife	♀	27.2	28.4	44.4	49.6	80
Franks of Hainaut	♀	72.4	17.2	10.3	44.6	29
Tenerife	♂ + ♀	38.3	34.1	27.5	48.0	331
Alamanni of Augst	♂ + ♀	47.0	29.0	24.0	47.0	84
Northwest Germans	♂ + ♀	39.0	39.0	22.0	47.7	103
Burgundians of Switzerland	♂ + ♀	49.0	36.0	16.0	46.8	55

The distribution of group divisions of the nasal index in Table 109 demonstrates the superior numbers of the platyrrhines in the Tenerife group, especially among the females, when compared with the old Germanic peoples of Switzerland and Belgium. It should be noticed that the " Nordic " subgroup of Tenerife males shows a moderately close approximation to the distribution of index divisions in the hyperleptorrhine Frankish males. But the Tenerife females are at the farthest remove from the female Franks. Although the Tenerife crania show the usual superiority in the middle division of the index, this superiority is not nearly as marked as in the majority of the other indices considered. The sex difference in the Tenerife crania is much more marked in this index than in most other indices, if the proportional composition of groups is taken into account.

Both in the means of the nasal index and in the proportions of the index subdivisions, the combined male and female Tenerife series show remarkable similarity to the combined series of Northwest Germans of the 9th to the 14th century.

Orbital index. Table 110 gives the means of orbital indices for various European and North African peoples, with the cranial groups arranged in the order of the value of the means of the male crania. One of the outstanding features of Guanche crania is the relatively low and broad form of the orbits. This chamaeconch condition is not confined to the Tenerife series, but seems to be more or less general in the archipelago (cf. supra, p. 106). It is partially because of this orbital form and the low mean value of the orbital index that many French anthropologists, after Hamy, have considered the Guanches of Tenerife a part of the so-called Palaeolithic race of Cro-Magnon. A glance at the next table should convince the reader that this orbital form has been very common in Europe not alone in the prehistoric period, but also in recent crania. Indeed the English crania from the London

TABLE 110. Comparative Table of Orbital Index
(Orbital breadth measured from dacryon)

	Observer	Males Number	Males Mean	Females Number	Females Mean
English of Whitechapel	Macdonell	?	77.8[1]	?	82.1
English of Moorfields	"	?	77.9[1]	?	80.0
Merovingians of Chelles	Broca	30	79.9	21	82.9
Neolithics of L'Homme Mort	"	5	80.0	5	81.7
Solutré	"	6	81.2	4	83.4
Guanches of Tenerife	Hooton	252	81.4	81	82.9
Neolithics of Baye, France	Broca	25	81.4	13	82.1
Mediaeval Maltese	Buxton	451	81.7	..	..
Merovingians of France	Broca	14	82.1	5	85.8
Parisians of 12th century	"	43	82.1	27	86.4
Portuguese	de Macedo	494	82.6	506	89.9
Tenerife "Nordics"	Hooton	74	83.3	..	..
Carthaginians	Bertholon	68	83.7	49	87.1
Modern Tunisians	"	17	83.9	15	87.3
N. W. Tunis modern	"	16	85.5	20	85.6
Tenerife "Mediterraneans"	Hooton	18	85.6	..	..
Corsicans	Broca	13	85.9	8	92.1
Ancient Egyptians	"	51	86.3	52	89.9
Franks of Hainaut	Houzé	35	86.6	27	87.0
Tenerife modern	Lajard	25	86.6	25	90.3
Arabs of Algeria	Broca	25	87.8	4	93.9
Kabyles of Algeria	"	20	88.1	6	91.9
Azores	Lajard	20	89.2	..	..

[1] Not strictly comparable since orbital breadths are measured from a point approximately corresponding to maxillo-frontale.

plague pits of the seventeenth century, show lower values of the mean orbital index than do the prehistoric inhabitants of Tenerife. Broca, in his classic memoir on the orbital index,[1] calls attention to the fact that all of the modern cranial series of Western Europe studied by him have mesoseme (mesoconch) or megaseme (hypsiconch) orbits, whereas all of his microseme (chamaeconch) series are ancient. He infers from this fact that at least one of the ancient races of Western Europe was characterized by a very low orbital index and that the attenuation of this character has been due to the arrival of new races whose orbital indices were much higher. Since this hypothesis seems to have received confirmation in various quarters it is perhaps worth while to present here a table showing the variation in the mean orbital index from ancient to modern times in certain North African and European regions where comparative data are available.

Table 111 shows clearly an increase in the value of the orbital index from ancient to modern times in Tunisia and Algeria, in France, Malta, Switzerland, and the Canary Islands. In Sweden and England the scanty material available does not indicate any such change. It is certain that many of the fluctuations within any given region are due to individual variations, small size of the series measured, and personal equation in the technique of orbital measurement. There is no indication of any consistent and gradual increase in

[1] P. Broca, Recherches sur l'Indice Orbitaire, Revue d'Anthropologie, vol. 4, 1875, p. 604 sq.

TABLE 111. Variations in the Orbital Index from Ancient to Modern Times

Tunisia, Algeria (Bertholon)	Males No.	Males Mean
Neolithics	5	83.1
Megalithic	20	84.1
Punic	117	85.2
Roman: Littoral	8	80.2
Tabarca	8	82.8
Tunis modern	32	85.4
N. W. Tunis modern	36	85.6
Kabyles	9	89.1
Beni Menaccer	28	89.7
Arabs of Algeria	18	85.6

France (Broca)	Males No.	Males Mean	Females No.	Females Mean	Total No.	Total Mean
Solutre	6	81.2	4	83.4	10	82.1
Neolithic						
L'Homme Mort	5	80.0	5	81.7	14	81.9
Baye	25	81.4	13	82.1	39	81.9
Dolmens	7	79.7	5	81.6	12	80.5
Merovingian						
Chelles	30	79.9	21	82.9	55	81.3
Various	14	82.1	5	85.8	20	83.0
Paris XIIth cent.	48	82.1	27	86.4	77	83.8
Paris XIXth cent.	76	85.7	40	88.2	122	86.4

Sweden (Retzius)	Males No.	Males Mean
Neolithic	18	80.2
Bronze	5	85.7
Iron	21	82.3

Malta (Buxton)	Males No.	Males Mean
Neolithic	6	76.5
Roman	15	84.0
Mediaeval	462	81.7
Modern	31	84.5

Switzerland (Schwerz)	Both Sexes Mean
Neolithic[1]	77.2
Bronze[1]	80.5
La Tene[1]	83.3
Roman[1]	81.1
Germanic[1]	81.3
Modern (Dissentis)[1]	87.3

England	Observer	Males No.	Males Mean	Females No.	Females Mean
Long Barrow	Schuster	8	82.6	3	81.1
Round Barrow	Schuster	20	81.2	9	83.2
Bronze	Parsons	7	74.0	..	..
Anglo-Saxon	Parsons	8	80.0	..	..
Anglo-Saxon	Hooton	..	..	3	86.6
Londoners, 17th century					
Moorfields	Macdonell	?	77.9[1]	?	80.0[1]
Whitechapel	Macdonell	?	77.8[1]	?	82.1[1]
Canary Islands					
Guanches of Tenerife	Hooton	252	81.4	81	82.9
Ancient Gran Canarians	Hooton	20	81.2	6	83.0
Modern Tenerifians	Lajard	25	86.6	25	90.3
Modern Gran Canarians	Lajard	25	86.5	25	91.7

[1] Orbital breadths measured from maxillo-frontale.

the orbital index such as might be attributed to a gradual elongation of the face, or to a reduction in bizygomatic diameter due to adoption of a diet of soft cooked food.

Bertholon and Chantre [1] ascribe the elevation of the orbital index in recent populations of Eastern Barbary to the eastward spread of a tall, dolichocephalic, leptorrhine race, of light pigmentation. This race is alleged to have pushed its way eastward, especially since the Roman period. They think it probable also that the Phoenician element in the Carthaginian population may have been accountable for the somewhat higher orbital indices displayed by the latter group, as contrasted with the succeeding Roman population. The microseme (chamaeconch) orbits are referred by them to a small brunet, very dolichocephalic type, with strong brow-ridges, projecting zygomata, and short, broad face.

[1] Op. cit., p. 325.

Buxton,[1] commenting on the increase in the value of the orbital index in modern Maltese crania, as contrasted with those of ancient times, quotes the opinion of Parsons that a microsemic orbit is a special characteristic of Neolithic man, an outcome of powerful jaw development. Buxton thinks that the modification of the shape of the orbital opening in later populations has been due in Malta to a change in the direction of Armenoid characteristics. He seems, therefore, to invoke physiological and environmental as well as morphological and hereditary factors.

Elliot Smith [2] ascribes a change in the form of the orbital opening in the early dynastic population from Giza, as contrasted with the orbital form of the predynastic Egyptians, to the intrusion of an Armenoid race.

Parsons [3] lays a good deal of stress upon the increased height of the orbits in Anglo-Saxon and eighteenth-century London crania as compared with those of the Long Barrow Neolithic skulls. " In looking at the full face view the wonderful difference in the orbits between the Long Barrow and the Clare Market skulls arrests the attention at once. In the former they are low and apparently broad, though, as a matter of fact, their breadth is about equal in the two series, while their upper and lower margins are nearly parallel. In the latter they are deep and often have a tendency to be wider externally than they are internally, owing to the lower margin being more oblique than the upper. When the Anglo-Saxon skulls are examined it is seen that they agree with the Londoners and contrast sharply with the Long Barrow people in this respect." Parsons compares the elongation of the face and increase of height of the orbits in Nordics to the similar phenomena observable in the crania of Eskimo and " cannot help thinking that these two changes are correlated and are the result of the narrowing and deepening of the nose to adapt it to a cold climate, ensuring that the air shall be brought as much as possible in contact with the turbinated bones, which act as heat radiators."

The value of the orbital index and the form of the orbital opening are, of course, determined by several factors. The most obvious of these are the length and breadth of the face. But the height of the orbit may be influenced also by the development of the supra-orbital ridges. Broca showed that the orbital index in females has a higher mean value than in males in practically all racial groups, and that the average difference in means of the index amounts to about three index units. He attributed this difference to the supposition that in male adults the brow-ridges grow down farther over the orbital opening than in the case of females, thus decreasing the height of the orbital opening relative to its breadth. If the height and breadth only of the face entered into the determination of the proportions of the orbits, female crania might be expected to show relatively lower and

[1] L. H. Dudley Buxton, The Ethnology of Malta and Gozo, Journal of the Royal Anthropological Institute, London, vol. 52, 1922, p. 180.

[2] G. Elliot Smith, The Ancient Egyptians, London, 1911, p. 116 sq.

[3] F. G. Parsons, On the Long Barrow Race and its Relationship to the modern Inhabitants of London, Journ. Royal Anthrop. Inst., London, vol. 51, 1921, p. 65 sq.

TABLE 112. Comparative Table of Means of Orbital Measurements

	Orbital Height				Orbital Breadth				
	Males		Females		Males		Females		
	Right	Left	Right	Left	Right	Left	Right	Left	Authority
Tenerife	32.70	32.73	31.60	31.63	40.11	39.77	38.20	38.86	Hooton
English of Moorfields	32.80	32.80	32.80	32.60	41.80	32.40	40.90	40.90	Macdonell
English of Whitechapel	33.50	33.40	33.60	33.70	43.10	43.00	41.20	40.90	"
Mediaeval Maltese	33.34	33.56	..	..	41.17	40.65	..	..	Buxton
Parisians (12th century)	32.91		32.57		40.07		37.69		Broca
Merovingians of Chelles	31.40		30.52		39.30		38.33		"
Merovingians of France	31.78		31.50		38.71		36.00		"
L'Homme Mort	31.20		30.40		39.00		37.20		"
Franks of Hainaut	33.73		32.88		39.08		37.81		Houzé
Arabs of Algeria	33.44		34.75		38.08		37.00		Broca
Ancient Egyptians	32.77		32.52		37.98		36.21		"
Kabyles	33.25		33.08		37.75		36.00		"
Orotava modern	32.20		32.80		37.18		35.70		Lajard
Portuguese	32.77		32.86		39.67		36.55		Macedo
Long Barrow English	31.28	31.81	30.87	30.62	38.28	38.12	37.87	36.87	Schuster
Round Barrow English	31.79	32.46	32.19	32.67	40.00	39.03	39.35	38.78	"

broader orbits than males, in view of the well known fact that females usually show shorter and relatively broader faces.

Table 112 shows that the Tenerife crania owe their low orbital indices partially to the great breadth of their orbits, in which they exceed all of the groups tabulated, except the seventeenth-century Londoners and the mediaeval Maltese, and partially to a somewhat submedium orbital height. The Moorfields and Whitechapel English seem to be characterized by an inordinate orbital breadth which is, in a large measure, responsible for their chamaeconch indices. The long-faced Franks of Hainaut have rather high orbital indices because of their high orbits, and the Merovingians of France show very low mean orbital indices in association with low orbital heights, as do also the Long Barrow and Round Barrow English. Diminution of orbital breadth rather than an increase of orbital height seems to be responsible for the high mean orbital index in Mediterranean race groups.

In Tenerife male crania the coefficient of correlation of upper facial index with mean orbital index is $.283 \pm .042$. The coefficient of correlation of the height of the right orbit with upper facial (nasion-alveon) height is $.552 \pm .031$. The coefficient of correlation of breadth of the right orbit with bizygomatic breadth is $.418 \pm .037$. The coefficient of correlation of orbital height with orbital breadth, calculated by the coefficient of variation method, is approximately $.452 \pm .033$. The coefficient of variation of the height of the right orbit is 6.38, while the coefficient of variation of the breadth of the same orbit is 5.09. Since the coefficient of variation of bizygomatic diameter is 4.09 and that of nasion-alveon height 6.69, it seems probable that variations in the orbital index are due rather more to variations in the height of the orbits and in the facial height than to variations in the breadth of the orbits, connected with facial breadth.

One of the factors influencing the extent to which orbital breadth is correlated with bizygomatic diameter is probably the degree to which the major axes of the orbits are tipped downward and outward. Given a large facial breadth, the axes of the orbits are likely to be nearly horizontal, but in narrow, long-faced types the inclination of the orbits is often marked. This may, to some extent, account for a lessened variability of the orbital breadth, as compared with the orbital height, since a narrowing of the bizygomatic breadth does not necessarily involve a reduction of orbital breadth, if the orbits are tilted.

Broca's point concerning the lowering of the orbital height in males through the downward growth of the supraorbital ridges raises the question as to whether or not skulls with large brow-ridges have low orbits, whereas those in which the brow-ridges are relatively undeveloped tend to have higher orbits. I have investigated this question in the Tenerife male crania by correlating the height of the right orbit with observations as to the degree of development of the brow-ridges. In skulls of which the brow-ridges are undeveloped or small, the average height of the right orbit is 32.64 mm. The average in skulls with medium brow-ridges is 32.66 mm. Skulls with large or very large brow-ridges have a mean right orbital height of 32.31 mm. The difference of .3 mm. is insignificant. On the other hand the following contingency table shows that there is some positive association between large brow-ridges and chamaeconch orbits.

TABLE 113. Association of Divisions of the Index of the Right Orbit with Observed Size of Brow-Ridges

Brow-Ridges	Orbital Index				
	Chamaeconch (x–82.9)	Mesoconch (83–88.9)	Hypsiconch (89–x)	Total No.	Per cent of series
Absent or small					
Number	33	20	6	59	23.60
Per cent of class	55.93	33.90	10.17		
Medium					
Number	75	47	10	132	52.80
Per cent of class	56.82	35.61	7.57		
Large or very large					
Number	45	10	4	59	23.60
Per cent of class	76.27	16.95	6.78		
Total					
Number	153	77	20	250	
Per cent	61.20	30.80	8.00		

Coefficient of mean square contingency = 0.178

The table above shows the extent to which chamaeconch orbits are associated with large or very large brow-ridges, and the general relationship of orbital index, classified according to its divisions, with the observed size of the brow-ridges. The mean square contingency coefficient is .178, which indicates an appreciable, although not a very strong, relationship between these two factors. The extent to which large or very large brow-

ridges are correlated with decreasing value of the orbital index may also be measured by means of the coefficient of correlation. The correlation coefficient is $.252 \pm .039$. On the other hand the correlation of increase in size of the brow-ridges with decrease in height of the right orbit is only $.095 \pm .042$. Broca's point concerning the diminution of orbital height in association with the development of the brow-ridges may be valid as a sex difference, but within our group of Tenerife males the size of the brow-ridges has little to do with the height of the orbit. It may be recalled that the anthropoids and Neanderthal man usually have very high and hypsiconch orbits, surmounted, however, by great supraorbital tori.

It seems permissible to conclude that the prevalence of chamaeconch orbits in our Tenerife male series is due primarily to the shortness of the face in this group, and secondarily to the fairly well developed facial breadth. Crania with large brow-ridges tend to have relatively lower and broader orbits. Since almost half of the male crania have microseme orbits associated with brow-ridges of small or medium development, it is clear that the size of the supraorbital ridges is a minor factor in the determination of the orbital form in Tenerife crania.

We are now in a position to discuss the various theories which have been advanced to explain the change in the value of the orbital index, which has been observed to distinguish modern crania from ancient crania in certain European and African areas. Buxton quotes Parsons to the effect that microsemic orbits may be a special characteristic of Neolithic man, an outcome of powerful jaw development. Our comparative tables show that microsemic orbits are by no means peculiar to Neolithic man and that the Neolithic English are less microseme than the Londoners of the seventeenth century. Very powerful jaw development is found in the crania of Eskimo and in Neanderthaloid crania, but in neither case associated with low, broad orbits. Apparently a strong development of the masticatory apparatus may increase the breadth of the orbits in correlation with the increase of facial breadth, but this does not necessarily result in chamaeconch orbits. The other hypothesis of Parsons relates the increase in height of the orbits to a narrowing and deepening of the nose to adapt it to a cold climate. While this explanation may be valid in the case of Eskimo and Northern Europeans it does not explain the recent elongation of the face, nose, and orbits in the peoples of Northwest Africa. It would be foolish to deny the possibility of modification of facial and orbital form through changes in the respiratory and masticatory apparatus, but the evidence indicates that both facial and orbital form are principally determined by heredity and by race.

Broca thought that at least one of the races which flourished in Western Europe during the Palaeolithic and succeeding periods was characterized by the possession of low and broad orbits. This feature has disappeared in Europe in modern times through the crossing of the microseme race with other races which have megaseme (high and narrow) orbits. The Guanches of Tenerife, in his opinion, although crossed with more modern types, especially in Gran Canaria, furnish one of the best examples of the modern survival of this micro-

seme race. Bertholon and Chantre, in their recent extensive anthropological survey of Eastern Barbary, concur in the opinion set forth by Broca and ascribe the elevation of the mean of the orbital index in recent times in North Africa to the spread of the dolichocephalic, leptorrhine, tall, and fair race. Elliot Smith and Buxton refer it rather to the influx of the hypsiconch Armenoid race.

In this connection it is pertinent to inquire what modern races are definitely characterized by hypsiconch (relatively high) orbits. It is certain that many of the so-called Mongoloid groups answer to this description and that the bulk of the brachycephalic Alpine race people of Europe show means of the orbital index that border on the hypsiconch category. Bertholon [1] gives as the mean orbital index of 5 crania of Armenians measured by Chantre 92.52, and of 60 Savoyards measured by Hovelacque 89.47. But many of the peoples usually regarded as predominantly Mediterranean in race, such as Spanish, modern and ancient Egyptians, and Arabs, also show consistently high orbital indices. On the other hand it is by no means certain that hypsiconchy is a Nordic race feature. Bertholon quotes Pruner Bey to the effect that 10 male crania from Scandinavia yielded an average orbital index of 91.6 and 3 female crania averaged 100.0. He states further that the dolichocephalic Dutch have an average orbital index of 88.9. But 21 Iron Age Swedish crania measured by Retzius give a mean orbital index of only 82.3. Furthermore none of the groups of crania supposedly belonging to the ancient Germanic peoples yield hypsiconch averages, and some of them are definitely chamaeconch. The highest means for supposed Nordics that I have been able to discover are those of the Franks of Hainaut, measured by Houzé, and Hamy's Merovingian series from Normandy. Of the former group, 35 male crania have a mean orbital index of 86.6 and 27 female crania average 87.0. The Merovingian Normans show means of 86.8 and 89.7 respectively for the two sexes. Most of the crania of supposedly Nordic peoples, such as the Swiss Alamanni and Burgundians, the Graverow crania of Germany, the Merovingian crania of France, the Anglo-Saxon crania of England, show clear evidence of the admixture of local and presumably non-Nordic types, and there is a tremendous range in the orbital index and in most other indices. If, as I am inclined to think, the Hainaut Franks represent a relatively pure Nordic type we may agree with Bertholon that rather high orbits are a character of this race, but in that event we must exclude the seventeenth-century Londoners from participation in this favored racial strain, for they are exaggeratedly microseme or chamaeconch. As a matter of fact I am of the opinion that London has never been in modern times a stronghold of the Nordic race, except, perhaps in the West End.

The group of Tenerife male crania which I have called Tenerife "Nordics" has a higher mean orbital index than the Guanche population at large. The average orbital index of 74 "Nordics" is 83.3, while the whole series has a mean of 81.4. But another subgroup of 18 male crania from Tenerife, which I have assigned to the "Mediterranean"

[1] Op. cit., p. 343.

race group on morphological grounds, has a mean orbital index of 85.61, and a group of brachycephals from Tenerife and Gomera has a mean orbital index of 83.78. It appears that all of those subgroups of the Canary Islands population which I have distinguished as non-Guanche, show higher values of the mean orbital index than occur in the bulk of the ancient Guanche population.

MEAN DIFFERENCES BETWEEN TENERIFE CRANIA AND OTHER RECENT CRANIA

Ancient Germanic and modern Tenerife crania.

TABLE 114. Differences between Means of Measurements and Indices of Ancient Germanic, Modern Tenerife, and Guanche Crania

(Measured from the Guanche means)

	Males	Males	Males and Females	
	Franks of Hainaut	Modern Tenerife	Burgundians	Alamanni
Glabello-occipital length	+ 2.4	−0.6	− 0.3	0
Maximum breadth	+ 0.3	−3.6	+ 0.3	+ 1.7
Basion-bregma height	+ 0.2	+4.2	+ 1.4	+ 2.7
Horizontal circumference	+10.7	−3.3	+14.8	+ 8.4
Nasion-opisthion arc	+11.3	+5.8	+ 8.2	+ 8.6
Transverse arc	− 0.9	−3.2	+ 8.4	+ 8.6
Minimum frontal diameter	− 0.6	−2.4	− 0.7	?
Maximum bizygomatic diameter	− 0.2	−9.0	− 1.4	+ 1.6
Nasion-alveon height	+16.5	−1.9	+ 1.4	+ 1.4
Nasal height	+ 4.3	−1.0	− 2.4	+ 1.4
Nasal breadth	+ 1.0	+0.7	+ 0.4	+ 0.4
Orbital height	− 0.1	−0.5	?	?
Orbital breadth	− 1.0	−3.0	?	?
Length-breadth index	− 0.7	−1.4	0	− 0.5
Length-height index	+ 0.1	+3.0	+ 1.3	+ 1.0
Breadth-height index	+ 0.4	+5.0	+ 1.3	+ 0.1
Upper facial index	+12.9	+0.4	+ 2.1	+ 2.0
Mean orbital index	+ 5.2	+5.2	?	?
Nasal index	− 3.6	+2.0	− 1.9	− 1.0
Mean difference regardless of signs				
Measurements	3.80	3.01	3.90	3.48
Indices	3.81	3.00	1.32	0.92

Table 114 and fig. 14 show the differences between the means of ancient Germanic and modern Tenerife crania, and our Guanche crania from Tenerife. Since the observers responsible for these comparative data have published only raw means, it is impossible to take into consideration the variabilities of their respective series. The Franks of Hainaut show significant excesses over our Tenerife males in length of the cranium and in the horizontal circumferences and nasion-opisthion arcs. Breadth and height measurements are substantially the same. The enormous facial lengths of this group are far in excess of our short-faced Guanches. In correlation with this great facial height the Franks have longer noses and narrower orbits.

Statistically it is scarcely a proper procedure to average the differences between raw means, regardless of signs, as has been done here. Probably little emphasis should be laid upon the results so deduced. However, they do furnish a rough basis for measuring the deviations between series in indices and in measurements. It should be noticed that the mean deviation of Franks from Guanches in 13 measurements is 3.8 mm. and the mean deviation in terms of index units is also 3.8. Yet the only strongly divergent indices of the six which could be compared are the indices of the upper face. The vault indices are closely

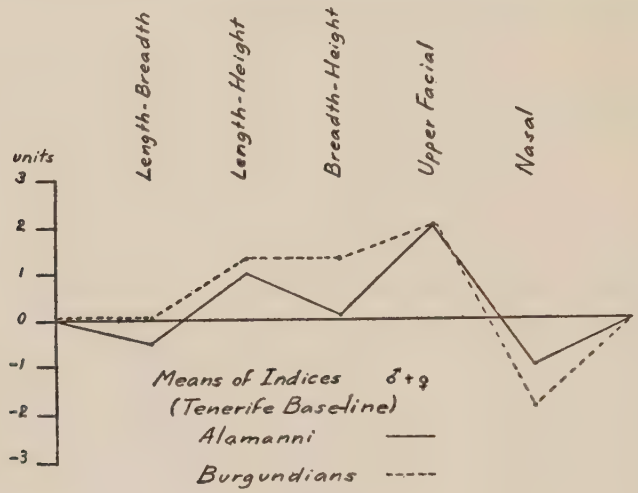


Fig. 14

similar. As I am inclined to consider facial indices more important for racial determinations in the case of mixed groups, my conclusion is that the probably purely Nordic Frankish males have no close cranial affinities with the generality of our Guanche males. The subgroup of Guanche males which I have called " Nordic," is a good deal closer to the Frankish series in the facial indices. But, as I have stated, I know of no published series, Nordic or non-Nordic, which shows any close approximation to the exaggerated leptoprosopy of the Hainaut Franks.

The modern Tenerife crania from Orotava are not much closer to the Guanches than are the Franks. The differences are more distributed and more constant. The Orotava modern males have much narrower and higher crania than the average of the ancient Guanches. Their faces are far narrower and somewhat shorter. Their orbits are relatively much higher, and their nasal index yields a significantly higher mean. The mean difference in 13 measurements is 3.01 mm. and in 6 indices 3.00 index units. This modern series is very different from the average of the ancient Guanches, but it is a good deal like the Guanche subgroup which I have called " Mediterranean."

The ancient Germanic Alamanni and Burgundians of Switzerland, measured by Schwerz, must be compared with our combined males and females, because they have not been differentiated as to sex. It may be recalled from our analyses of the group divisions of

indices that the Alamanni and Burgundians seemed to consist of a heterogeneous group of dolichocephals and brachycephals, with a comparatively small number of mesocephals, presumably the result of the mixture of the two other types. On the other hand, our Tenerife series is predominantly mesocephalic, with a good representation of dolichocephals and very few brachycephals. The mean difference in 10 measurements amounts to 3.90 mm. in the case of the Burgundians, and 3.48 mm. in the case of Alamanni. Lack of differentiation of the sexes makes these mean differences of little significance, because they may be largely affected by the various proportions of males and females in the respective series. The differences in indices tell another story. The mean differences for 5 indices are: for Burgundians 1.32, and for Alamanni 0.92 index units. There are no significant differences of the length-breadth index, but the length-height indices are a unit or more higher in both Swiss series; the facial indices are 2 units higher, and the nasal indices from 1 to 2 units lower. The old Germans of Switzerland, as a group, had higher heads, longer faces, and relatively narrower noses than our Guanches. Orbital indices cannot be compared on account of differences in technique of measurement; but these Germanic groups had relatively low and broad orbits. I should conclude, on the whole, that the Burgundians and Alamanni represent populations in which most of the racial elements found in the Guanches occur, but in different proportions and in a less mixed state. Certainly Nordic and Alpine elements are found in all of the groups, but the Alpine strain is much stronger in the Swiss Germanic populations, while other elements which may be termed Mediterranean and proto-Mediterranean, or proto-Nordic, are perhaps more feebly represented among the Alamanni and Burgundians than among the Guanches.

Crania of seventeenth-century English.

The most interesting and satisfactory comparison that I have been able to institute between the Tenerife crania and those of other regions, is that of the seventeenth-century London crania studied by Macdonell. In this case, all of the statistical constants necessary for proper comparison have been calculated. Table 115 shows the differences between means of measurements and indices of Moorfields and Whitechapel males on the one hand, and Tenerife males on the other, together with the probable errors of these differences and three times the probable errors. Differences in excess of three times the probable error of the difference may safely be regarded as significant, and not due to fluctuations incident to smallness of series compared, or to the sampling process.

An outstanding difference between the Guanche crania and those of both London series lies in the greater skull-length of the latter series. The excess amounts to more than 3 mm. on the average. In correlation with this difference the nasion-opisthion arcs are greater in the English crania. The mean breadth of the Moorfields crania does not differ significantly from that of the Guanches, but this diameter is significantly less in the Whitechapel crania. A probably significant deficiency in height of the Moorfields crania is also

TABLE 115. Differences between Means of Measurements and Indices of Seventeenth-Century English and Guanches of Tenerife: Males

	Moorfields		Whitechapel	
	Difference	3 × p. e.	Difference	3 × p. e.
Glabello-occipital length	*+3.30±0.61*	*1.83*	*+3.21±0.43*	*1.29*
Maximum breadth	+0.91±0.57	1.81	*−1.44±0.37*	*1.11*
Basion-bregma height	−2.05±0.78	2.34	+0.15±0.40	1.20
Horizontal circumference	+4.95±1.72	5.16	+2.12±1.09	3.27
Nasion-opisthion arc	*+9.61±1.38*	*4.14*	*+8.22±0.97*	*2.91*
Transverse arc	+1.36±1.52	4.56	*+3.88±0.83*	*2.49*
Minimum frontal diameter	*+2.37±0.46*	*1.38*	*+1.92±0.33*	*0.99*
Maximum bizygomatic diameter	−3.18±1.21	3.63	*−2.13±0.62*	*1.86*
Nasion-alveon height	−1.54±0.65	3.63	+0.51±0.36	1.08
Nasal height	−0.47±0.42	1.26	+0.38±0.25	0.75
Nasal breadth	−0.11±0.31	0.93	+0.15±0.19	0.57
Orbital height, right	+0.25±0.35	1.05	*+0.84±0.20*	*0.80*
Orbital height, left	+0.08±0.33	0.99	*+0.72±0.17*	*0.51*
Basion-nasion length	−1.50±0.55	1.65	*+1.54±0.30*	*1.90*
Basion-alveon length	+1.35±0.69	2.07	*+2.25±0.39*	*1.17*
Length-breadth index	−0.47±0.33	0.99	*−1.65±0.21*	*0.63*
Length-height index	*−2.10±0.43*	*1.29*	+0.50±0.22	0.88
Breadth-height index	*−2.97±0.59*	*1.77*	+0.79±0.34	1.02
Upper facial index	+0.57 [1] ..	..	+1.71 [1] ..	..
Gnathic index	+3.19 [1] ..	..	+2.85 [1] ..	..
Nasal index	+0.12±0.69	2.07	+0.09±0.42	1.26
Mean difference regardless of signs				
Measurements (15)		2.20		1.97
Indices (6)		1.57		1.26

[1] Calculated from the means of the measurements.

to be noted. There is also a marked excess in the transverse arc in the Whitechapel crania, which is difficult to understand in view of the identical basion-bregma height and the smaller breadth of this series, when compared with the Guanches. Both of the English series show minimum frontal diameters considerably larger than the mean of the Guanches, and smaller bizygomatic diameters. The Moorfields crania have shorter faces, and the Whitechapel crania have rather longer faces. The basion-nasion length is shorter in the Moorfields series and longer in the Whitechapel series. The basion-alveon (prosthion) length is much longer in the Whitechapel crania, and there is a possibly significant excess in the Moorfields crania. But the mean difference in measurements is only 2.20 mm. in the case of the Moorfields crania, and 1.97 mm. in the case of the Whitechapel crania. The mean difference regardless of signs, between the two English series, for the same measurements, is 1.47 mm.

If we consider differences in indices we find that the cranial index is significantly lower in the Whitechapel crania, and about the same in the Moorfields crania as in the Guanches. Both the length-height and breadth-height indices are considerably lower in the Moorfields series. The Whitechapel crania apparently have relatively longer faces, but this is not true in the case of the Moorfields crania. Orbital indices are not directly comparable because of

difference in technique of measurement, but both Moorfields and Whitechapel crania have, like the Guanches, very chamaeconch orbits. There is no significant difference in nasal index, but the English crania show markedly higher gnathic indices and are more prognathous. The mean difference in indices between Guanches and Moorfields English is, for 6 indices 1.57 index units, and for Whitechapel crania 1.26 index units. The mean difference between Moorfields and Whitechapel crania for the same group of indices is 1.24 index units. It is therefore apparent that there is very little more difference between the

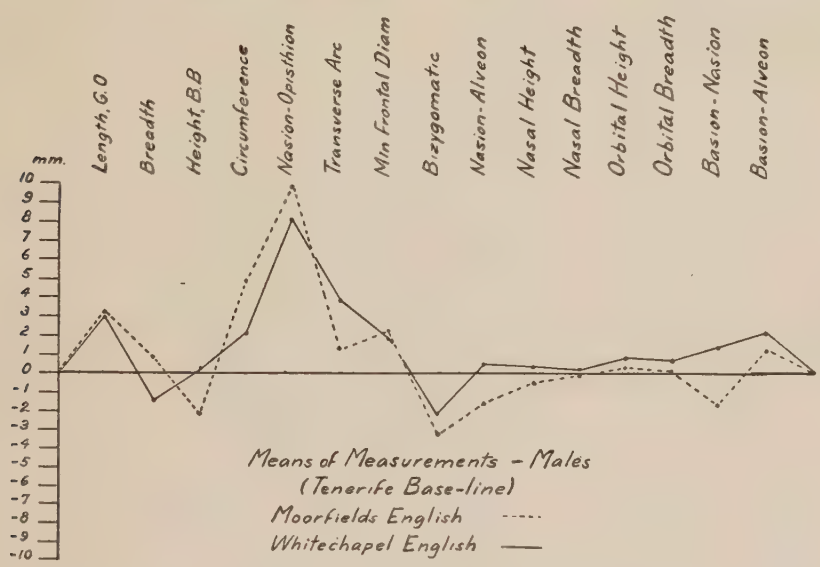


FIG. 15

Guanches and the two series of seventeenth-century Londoners with respect to the measurements and indices considered, than between the two groups of approximately contemporaneous inhabitants of London.

This problem may be attacked also by a comparison of the variabilities of the several series through the medium of their coefficients of variation. The values of the coefficients of variation, for both males and females, are given in Table 116. In the measurements of males the variability of basion-bregma height is considerably greater in the Moorfields series than in the Whitechapel or Guanche series. Both the English series show greater variabilities in the transverse arc, but the minimum frontal diameter is less constant in the Guanches. Upper facial height, except in the female series, and nasal height are more variable in the Guanches, and nasal breadth in the English. In general the variability of the male Guanche series with respect to measurements is less than that of the Whitechapel series, and about the same as that of the Moorfields series. On the basis of the mean variabilities the Guanches are much closer to the Moorfields Londoners than are the latter to the contemporaneous population of Whitechapel. Similarly the Tenerife females are less variable than either of the series of English females with respect to measurements, and in

mean variability of measurements the Whitechapel females are closer to the Guanches than they are to the Moorfields females.

The mean variabilities of the four indices available for comparison through their respective coefficients of variation show a greater homogeneity of the Guanche population of both sexes than either of the English groups. The English series resemble each other more closely than either of them resemble the Guanches.

On the whole the Guanche population, on the basis of measurements and indices, is closer to both groups of seventeenth-century Londoners than to any other groups which we have considered. Tenerife Guanches are, in the case of the males, more like the English

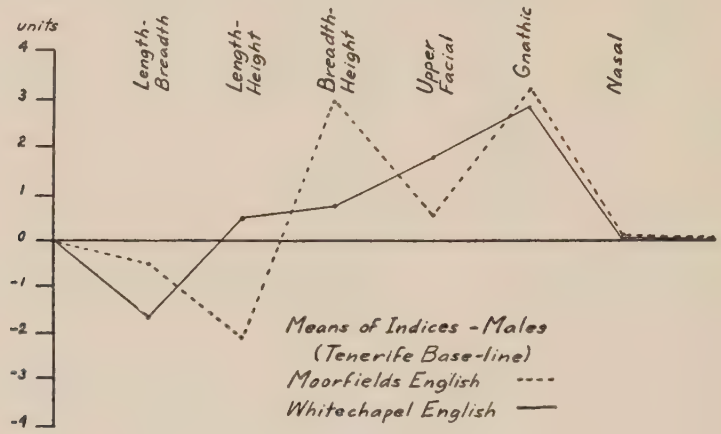


Fig. 16

than like the adjacent population in the island of Gomera. On this general basis it would be as easy to tell from measuring a skull what cemetery in London it came from as to tell whether it came from London or from the Canary Islands.

The question arises as to the significance of this close resemblance between these groups. Is it merely fortuitous? Does it indicate similarity of racial constituency? Or can the similarities have been brought about through environment? It is easy enough to answer the last question. It is hard to imagine any similarities of physical environment which could effect a resemblance between the Neolithic troglodyte dwellers on the arid, semi-tropical, mountainous island of Tenerife, and the Iron-Age urban residents of a crowded, commercial quarter of drizzly, chilly, swampy, seventeenth-century London. It would be much easier to explain the differences on this basis.

May the resemblances in indices, measurements, and variabilities in these different populations be due merely to chance? In the first place one has to consider the significance of the arithmetical means upon which these comparisons are based. Putting aside the error which may be due to the size of the groups considered and to their individual constituents — an error which can be estimated more or less accurately by biometric methods — we have still to deal with the fact that the arithmetical mean may not coincide with the

TABLE 116. Comparison of Variabilities of Tenerife Crania with those of Seventeenth-Century Londoners

	Males			Females		
	Tenerife	Moorfields	Whitechapel	Tenerife	Moorfields	Whitechapel
Glabello-occipital length	2.88±0.10	2.95±0.21	3.31±0.13	2.75±0.14	3.28±0.20	3.45±0.14
Breadth maximum	3.48±0.10	3.71±0.26	3.75±0.15	2.42±0.13	3.84±0.23	3.54±0.14
Basion-bregma height	3.71±0.12	4.97±0.41	4.21±0.18	3.25±0.17	3.82±0.27	3.96±0.17
Horizontal circumference	2.91±0.09	2.74±0.21	2.87±0.12	2.56±0.14	3.32±0.21	2.92±0.12
Nasion-opisthion arc	3.31±0.10	3.17±0.24	3.63±0.15	3.53±0.19	3.71±0.24	3.90±0.16
Transverse arc	3.10±0.10	4.11±0.35	3.70±0.16	3.03±0.16	3.79±0.28	3.97±0.17
Minimum frontal diameter	5.12±0.15	4.19±0.29	4.29±0.17	4.42±0.23	4.25±0.25	4.55±0.18
Maximum bizygomatic diameter	4.09±0.13	3.60±0.65	4.28±0.31	3.94±0.22	3.54±0.40	4.13±0.34
Nasion-alveon height	6.69±0.21	5.99±0.64	5.50±0.30	5.88±0.32	5.71±0.53	7.14±0.43
Nasal height	6.84±0.21	5.16±0.55	5.08±0.27	6.25±0.33	5.74±0.53	5.55±0.32
Nasal breadth	6.51±0.20	7.91±0.89	8.89±0.51	6.82±0.36	8.21±0.77	7.06±0.42
Orbital height, right	6.38±0.19	6.46±0.73	6.65±0.38	7.01±0.37	6.22±0.60	4.47±0.27
Orbital height, left	6.50±0.20	6.47±0.69	5.61±0.33	5.78±0.31	7.11±0.73	4.31±0.26
Basion-nasion length	3.85±0.12	4.64±0.38	4.07±0.18	3.82±0.20	4.53±0.32	4.11±0.18
Basion-alveon length	4.48±0.14	4.33±0.50	4.68±0.26	4.98±0.27	6.14±0.59	4.95±0.31
Length-breadth index	3.03±0.09	3.97±0.29	4.38±0.18	3.12±0.16	3.14±0.20	3.99±0.17
Length-height index	3.40±0.10	5.07±0.44	4.61±0.20	3.28±0.17	4.14±0.30	4.10±0.18
Breadth-height index	4.43±0.14	5.16±0.44	4.86±0.21	3.97±0.21	4.40±0.32	4.16±0.18
Nasal index	9.43±0.28	8.68±0.98	9.64±0.55	7.64±0.41	8.12±0.76	8.16±0.49
Mean of coefficients of variation						
Measurements (15)	4.66	4.69	4.89	4.43	4.86	4.56
Indices (4)	5.07	5.69	5.87	4.50	4.95	5.10

mode but may represent a more or less fictitious figure realized in but a few observations of a series. To some extent this difficulty is eradicated by the use of the standard deviation and the coefficient of variation, and in our own Guanche series the homogeneity is so great that the mean value of an index or a measurement is usually a close approximation to the most frequent or modal observation. It is very easy to find two series which show a close correspondence in the means of one or two measurements or indices, but such coincidences become increasingly difficult to find, the larger the number of measurable characters considered. Leaving out of consideration the question of mathematical probability, any old-fashioned craniologist who has been in the habit of comparing series through the means of their measurements and indices is well aware that if he uses an adequate number of such measurements or ratios, he is exceedingly unlikely to find any two series showing great similarity, unless they belong to racially similar groups and display in addition decided morphological similarities. I believe that the extent of the resemblance between the Guanches of Tenerife and these seventeenth-century Londoners is such as to preclude the possibility of its being due to chance.

Finally we may consider the question of the extent to which the similarities of the groups under discussion may indicate racial affiliation. At the outset one may admit that neither the seventeenth-century Londoners nor the Guanches were racially pure. On the

contrary both groups seem to have been pretty thoroughly mixed. It is then a question of the combination of identical racial elements in approximately the same proportions to produce a similar mixed type or of a combination of different racial elements in different proportions to produce a similar mixed type. I wish to defer the discussion of these two alternatives to a later stage of the investigation. At the present I shall content myself with pointing out that the similarities shown to obtain in these different groups of crania are not fortuitous and are attributable to racial rather than to environmental factors.

B. THE RELATION OF THE GUANCHES AND OTHER ANCIENT INHABITANTS OF THE CANARY ISLANDS TO THE SO-CALLED "RACE OF CRO-MAGNON"

In the month of March, 1868, certain skeletons were uncovered in the rock-shelter of Cro-Magnon at the village of Les Eyzies in the valley of the Vézère River, Dordogne, France. These remains were first described by Broca,[1] who made them the type of a new race, which first appeared in Europe in the Upper Palaeolithic Age. This race is supposed to have been responsible in a large measure for the admirable paintings, engravings, and sculptures produced in Western Europe during the last glacial retreat. Subsequent discoveries of skeletons of Upper Palaeolithic date, attributed to the "Cro-Magnon race," have been numerous. The first investigator to recognize a resemblance between the crania of the troglodytes of the Dordogne and the Guanches of the Canary Islands was the famous anthropologist Hamy. He and his equally noted colleague, Quatrefages, recognized the survival of this remarkable Quaternary race and its racial identity with the Guanches of Tenerife.[2] At the same time they admitted the presence in the ancient population of the Canary Islands of racial elements other than that of Cro-Magnon. In order to investigate this question Dr. René Verneau went to the Canary Islands and for five years explored the archaeological sites and collected skeletal material. As a result of his researches Verneau published an admirable series of papers and monographs in which he concluded the "Cro-Magnon race" to be the dominant element among the Guanches of Tenerife and a recognizable strain in the ancient populations of the remaining islands of the archipelago.[3]

Numerous other competent anthropologists have studied the skeletal remains of the Guanches and have, for the most part, admitted the presence in that extinct people of a "Cro-Magnon race" element. Among these should be mentioned Berthelot, Chil, Von Luschan, Meyer, Sergi, Shrubsall, and Von Behr.

The present writer has held the opinion for a number of years that the status of the "Cro-Magnon race" has been insufficiently defined and is dubious, in spite of the numerous

[1] P. Broca, Sur les crânes et ossements des Eyzies. Bull. Soc. d'Anthropol., Paris, 1868, s. 2, vol. 3, pp. 350–392.

[2] A. de Quatrefages, and E. T. Hamy, Races humaines fossiles. Race de Cro-Magnon, Comptes rendus de l'Académie des Sciences, séance du 30 mars, 1874, pp. 861–7; Crania Ethnica, Paris, 1882, pp. 95–96.

[3] The most important works of Professor Verneau upon this subject are: R. Verneau, Rapport sur une mission scientifique dans l'Archipel Canarien, Archives des Missions Scientifiques et Littéraires, s. 3, vol. XIII, Paris, 1887, pp. 557–817; Cinq années de séjour aux îles Canaries, Paris, 1891, p. 103.

and distinguished contributions to its anthropology which have been made by authorities of the highest rank. He has, therefore, considered it necessary to review and analyze the existing data in regard to this important fossil " race," before proceeding to a discussion of its relationship to the Guanches.

Anatomical descriptions of the " Cro-Magnon race." In his classic memoir on the skeletons from Les Eyzies, Broca [1] summarizes the characteristics of the " Cro-Magnon race " as follows:

Leur taille est très-élevée; leurs os sont robustes; leurs tibias sont aplatis, leurs fémurs présentent, immédiatement au-dessus de la région trochantérienne, une vossure courte et rude; leurs cubitus ont une cavité sigmoïde relativement peu profonde et offrent tout en haut, au-dessus de l'apophyse coronoïde, une concavité assez manifeste, tournée en avant; leur bassin est très-large; leur tête enfin est très-volumineuse, très-dolichocéphale. Cette dolichocéphalie n'est point due à l'étroitnesse du crâne, dont la largeur est au contraire assez considérable, mais à sa grande longeur. Les arcs surcilliers des hommes sont très-développés, la racine du nez est très-déprimée, le front est large, vertical et bombé, surtout sur la ligne médiane; les régions temporales ne sont nullement saillantes; la plus grande largeur de la tête correspond à peu près au niveau des bosses pariétales; bien au-dessus du niveau des régions auriculaires; et le profil du crâne présente la forme d'une ellipse allongée, dont l'extrémité antérieure, ou frontale, est bien développée, mais dont l'extrémité postérieure, ou occipitale, est plus renflée encore. . . . La face est orthognathe de la racine du nez à l'épine nasale, qu'au-dessus de cette épine on remarque un prognathisme alvéolaire, beaucoup plus prononcé chez l'homme que chez la femme; que les orbites sont très-larges et très-peu développées dans la sense vertical, qu'enfin la face, dans sa ensemble, est très-large par rapport à sa longueur.

Professor Verneau, who has studied the " Cro-Magnon " skeletons from the caves of Grimaldi, near Monte Carlo, summarizes as follows the principal characters of the crania, upon which he bases his conclusion that they belong to the fossil race of the Vézère: [2]

1° La tête offre toujours un volume très remarquable qui tient en partie, il est vrai, à la haute taille des individus;

2° Il existe constamment une dysharmonie frappante entre le crâne, dolichocéphale, et la face, à la fois basse et large. . . .

3° La courbe antéro-postérieure s'élève d'abord dans une direction très peu oblique au-dessus de la glabelle; puis elle s'infléchit assez brusquement après avoir dépassé les bosses frontales pour se continuer avec régularité jusqu'au tiers postérieur environ des pariétaux. A ce niveau commence un méplat qui se prolonge sur la partie supérieure de l'écaille occipitale et qui est suivi d'un renflement de la région iniaque;

4° Malgré sa dolichocéphalie, qui est surtout pariéto-occipitale, le crâne présente des diamètres transversaux avantageux;

5° La face offre, chez tous nos sujets, les caractères essentiels du type de Cro-Magnon. Sa dilatation transversale est principalement due au développement des pommettes et des arcades zygomatiques, car les maxillaires supérieurs restent étroits et le nez, lorsque les bords n'en sont pas brisés, est généralement leptorhinien. A sa racine, l'appendice nasal présente une dépression très marquée; mais sa charpente se relève vite pour faire une saillie très appréciable;

[1] Op. cit., pp. 358–359.

[2] R. Verneau, Les grottes de Grimaldi, vol. II, part 1, Anthropologie, Monaco, 1906, p. 87.

6° Les arcades sourcilières, très volumineuses au niveau des sinus frontaux, s'atténuent rapidement et ne forment aucune proéminence dans leur portion externe;

7° Les orbites sont toujours microsèmes. Elles ont leurs angles à peine arrondis et affectent la forme rectangulaire, allongée transversalement, qui est si charactéristique de la race de la Vézère;

8° La mandibule est très robuste, avec une branche montante large et fort peu inclinée, et un menton proéminent, de forme triangulaire;

9° Les arcades dentaires ne divergent pas en arrière. Les dents présentent une usure oblique des plus marquées.

But Verneau notices the following variations in the "Cro-Magnons" of the Grimaldi caves:

1° Les bosses pariétales se détachent moins nettement que sur le vieillard de Cro-Magnon et, par suite, la forme pentagonale de la voûte s'atténue ou disparaît;

2° L'occipital, dans sa région iniaque, tout en présentant un renflement notable, est moins proéminent, moins comprimé latéralement, de sorte que le chignon ne se détache pas avec autant de netteté;

3° La base n'offre pas, en général, l'aplatissement signalé sur le vieillard des Eyzies; elle est plutôt renflée.

4° Le prognathisme sous-nasal tend à disparaître chez les pluparts de nos sujets.

Other features stated to be characteristic of this "race" are extremely high stature, and disproportionately long tibiae, radii, and ulnae. With these features I have already dealt (supra, p. 82). At the present we are concerned solely with the skull.

These cranial characters of the Cro-Magnon type seem then to be as follows:

Size: very large.

Cranial vault: very long but broad, dolichocephalic, forehead steep and broad, sagittal region low (?), lambdoid region flattened, lower portion of occiput protuberant, temporals flat, base flat or swollen.

Face: Short, very broad, malars and zygomata very large, brow-ridges large but confined to medial portions of orbits; orbits very broad and low, rectangular; nasal root depressed, nose high and narrow, no facial prognathism, alveolar prognathism present or absent.

Mandible: ascending ramus very broad and gonial angles small, chin eminence very pronounced and triangular.

Of these cranial characters the following seem to be regarded as the especial criteria of the "racial type": (1) great size; (2) a dolichocephalic skull-vault associated with a short, broad (euryene) face (disharmony); (3) broad and very low (chamaeconch) orbits; (4) Palaeolithic provenience.

Measurements and indices of "Cro-Magnon" crania. Many of the features enumerated above are measurable, and it is obvious that the type so described should exhibit a certain metrical and indicial consistency, if it is to be taken as the definition of a race. For the anthropological conception of a race is that of a great physical division of man, characterized by the possession in common of a majority of metrical and morphological features derived from its ancestors. I have not been able to find any study of the

TABLE 117. Measurements and Indices of "Cro-Magnon" Crania

	Cro Magnon No. 1 [1]	Cro Magnon No. 2 [1]	Ofnet No. 21 [2]	Chancelade [2]	Obercassel [3]	Grotte des Enfants [1]	Grotte du Cavillon [1]	Musée du Menton [1]	Barma Grande No. 1 [1]	Barma Grande No. 2 [1]	Moravia [4]	Dartford [5]	Solutré No. 2 [6]	Solutré No. 3 [6]
Length, glabello-occipital	202	203	200	194	194	198	?	194	211	206	193	207	?	?
Breadth maximum	149	156	141	135	144	(151)	140	140	134	142	141	150	?	?
Height, basion-bregma	132	121	143	151	138	(133)	?	?	?	158	(140)	(144)	?	?
Minimum frontal diameter	103	100	100	101	100	103	(93)	110	?	(112)	(99)	112	?	?
Horizontal circumference	568	580	550	548	552	560	?	551	?	547	550	?	?	?
Nasion-opisthion arc	405	400	410	393	383	391	?	?	(411)	?	397	?	?	?
Transverse arc	330	?	?	325	312	323	?	?	?	350	320	?	?	?
Bizygomatic diameter	141	?	133	139	(153)	(155)	?	?	?	152	135	?	143	?
Nasion-alveon height	70	?	70	76	(72)	67	(68)	?	?	64	69	?	73	?
Orbital breadth	44	?	41	38	45 [1]	45	43	?	48	43	40	?	?	?
Orbital height	27	?	29	31	30	30	28	?	29	30	29	?	?	?
Nasal height	51	?	42	59	(52)	51	(52)	?	?	53	50	?	?	?
Nasal breadth	23	?	26	22	23	(29)	(26)	?	?	25	24	?	?	?
Cranial module	161	160	161	160	159	161	..	..	..	169	158	167	..	..
Length-breadth index	73.8	76.9	70.5	69.5	74.2	72.3	..	..	63.0	71.4	73.1	72.5	79.3	79.1
Length-height index	65.4	59.6	71.5	77.8	71.1	67.2	..	..	..	76.7	72.5	69.6	..	..
Breadth-height index	88.6	77.6	101.4	111.8	95.8	88.1	..	..	..	111.2	99.3	96.0	..	..
Upper facial index	49.6	..	52.6	54.7	47.1	43.2	..	..	..	42.1	51.1	..	51.0	..
Orbital index	61.4	..	70.7	81.5	67.0 [1]	66.7	65.1	..	60.4	69.8	72.5	..	68.1	..
Nasal index	45.1	..	61.9	37.3	44.2	56.9	50.1	..	..	47.1	48.0	..	..	..

[1] R. Verneau. Les Grottes de Grimaldi, vol. II, part I, pp. 85–86.

[2] The measurements of the Ofnet crania are those of Schliz, and those of the Chancelade cranium are due to Testut. Ofnet No. 21 is not usually considered a Cro-Magnon skull, but I have included it because it answers the requirements at least as well as the bulk of the other specimens which have been assigned to the type, without question. The Chancelade skull is sometimes considered a variant of the Cro-Magnon type, and is sometimes given separate racial classification.

[3] R. Bonnet. Die Diluviale Menschenfund von Obercassel bei Bonn, Wiesbaden, 1919.

[4] J. Szombathy. Un crâne de la race de Cro-Magnon trouvé en Moravie, L'Anthropologie, XII, 1901, pp. 150–157.

[5] A. Keith. The Antiquity of Man, London, 1915, p. 168.

[6] Ch. Depert, F. Arcelin, L. Mayet, Comptes Rendus de L'Académie des Sciences, 177, No. 158, octobre, 1923, p. 623.

"Cro-Magnon race" which includes the more recently discovered specimens and attempts to appraise its consistency and variability according to modern biometric methods. I have therefore compiled a list of the measurements of the more important recent finds of Cro-Magnon man (Table 117), and have calculated the means, standard deviations, and coefficients of variation of the principal measurements and indices. With the exception of the famous old man of Cro-Magnon and the calvarium called "Cro-Magnon No. 2," I have not included in my tables the earlier specimens the means of which have been calculated by the authors of Crania Ethnica. In Table 118 the means and other statistical constants of the "Cro-Magnon" crania (males), the raw measurements of which are given in the preceding table, have been set against the means of the "Cro-Magnon" series given by Quatrefages and Hamy.

Let us first consider the measurements and indices of the individual crania (Table 117). The lengths vary from 193 mm. to 211 mm. It may fairly be said that they are all long skulls. The maximum breadths vary from 134 mm. to 156 mm. Two of the crania, the Chancelade and Barma Grande No. 1 specimens, have rather narrow transverse diameters. Verneau thinks that the Barma Grande cranium has suffered some post-mortem lateral compression and the Chancelade skull is usually considered "a variant" of the type. The basion-bregma heights of these crania range from 121 mm. to 158 mm. Martin gives the individual range of skull heights as 55 mm. (102 mm.–157 mm.). Our nine Cro-Magnon skulls show a range of 37 mm. or 67.3 per cent of the entire range of individual variation.

TABLE 118. Means of Measurements and Indices of "Cro-Magnon" Crania
(Compiled from data of Table 117)

	Crania Ethnica					
	No.	Mean	No.	Mean p. e.	St. D. p. e.	V.
Length, glabello-occipital	10	192.2	11	200.18±1.19	5.87±0.84	2.93±0.42
Breadth, maximum	12	141.2	12	143.58±1.24	6.37±0.88	4.43±0.61
Height, basion-bregma	4	132.5	9	138.89±2.29	10.20±1.62	7.34±1.17
Minimum frontal diameter	11	96.3	12	103.75±1.26	6.62±0.93	6.38±0.88
Horizontal circumference	9	543.7	9	556.22±2.89	10.50±1.67	1.88±0.30
Nasion-opisthion arc	?	388.5	8	398.75±2.20	9.09±1.45	2.28±0.38
Transverse arc	7	309.0	6	326.67±3.18	11.77±2.24	3.61±0.70
Bizygomatic diameter	3	135.3	8	143.88±1.90	7.92±1.35	5.50±0.93
Nasion-alveon height	5	69.6 [1]	9	69.89±0.71	3.23±0.52	4.62±0.73
Orbital breadth	5	40.3	9	42.78±0.60	2.74±0.41	6.40±1.01
Orbital height	5	28.8	9	29.22±0.25	1.13±0.17	3.86±0.61
Nasal breadth	5	25.4	8	24.75±0.48	2.10±0.34	8.48±1.43
Nasal height	5	51.9	8	51.25±1.00	4.35±0.70	8.49±1.43
Length-breadth index	10	73.57	12	71.83±0.65	3.41±0.47	4.75±0.65
Length-height index	4	69.83	9	70.11±1.17	5.34±0.84	7.62±1.21
Breadth-height index	4	94.28	9	97.56±1.95	8.86±1.40	9.08±1.44
Upper facial index	5	51.44 [2]	8	49.25±1.06	4.46±0.75	9.06±1.53
Orbital index	4	68.66	10	68.30±1.24	5.90±0.88	8.64±1.30
Nasal index	4	49.18	8	48.75±1.73	7.27±1.22	14.91±2.57
Cranial module	?	155.30 [2]	9	160.56±0.31	1.42±0.23	0.88±0.14

[1] Secured by adding mean of nasal height to mean of intermaxillary height.
[2] Calculated from the means of the measurements.

The range of 241 male Guanche crania of Tenerife is 119 mm.–149 mm. (30 mm.), and all authorities admit that the Guanches were racially mixed. Another measurement which shows considerable variation in the Cro-Magnons is the bizygomatic diameter (133 mm.–155 mm.). The other measurements of the face show some consistency, although the nasal diameters seem rather erratic.

When we consider the indices, we find first of all in the length-breadth index a range from 63 to 79, then in the length-height index from 69 to 78, and again in the breadth-height index from 78 to 112. Surely a most variable "race" was that of Cro-Magnon! The range of the upper facial index is 42 to 55, of the orbital index 60 to 81, of the nasal index 37 to 62. The coefficient of variation of the nasal index is 14.9.

If the means of our compilation of Cro-Magnon crania be compared with the means given by the authors of Crania Ethnica, as in Table 118, it will be seen that the measurements of the cranial vault in the former series far exceed those of the latter series. On the other hand, the facial measurements are very similar, as are also most of the indices.

Large Tenerife crania and "Cro-Magnon" crania. In spite of the inadequate size of the Cro-Magnon series, I have calculated standard deviations and probable errors, in order to compare the Cro-Magnon group with our Tenerife crania. In Table 119 I have calculated the means of all of the Tenerife male crania with modules of 159 or more, and the difference between these means and the corresponding means of the Cro-Magnon series, together with three times their probable errors. I have made this selection of crania on the basis of size of the cranial vault, because it is the macrocephalic element in the Guanche population

TABLE 119. Means of Measurements and Indices of Tenerife Males with Cranial Modules of 159 or More, with Differences from Cro-Magnon Means and Three Times the Probable Errors of Such Differences

	Largest Tenerife Crania					Difference from Cro-Magnon		
	No.	Mean	p. e.	St. D.	p. e.	V	Mean	p. e.	3 × p. e.
Length, glabello-occipital	22	194.41	±0.46	3.24	±0.33	1.67	− *5.77*	*±1.28*	*3.84*
Breadth, maximum	22	150.45	±0.36	2.54	±0.26	1.68	+ *6.87*	*±1.29*	*3.87*
Height, basion-bregma	22	137.96	±0.71	4.95	±0.50	3.59	− 0.93	±2.39	7.17
Horizontal circumference	23	545.26	±1.77	12.57	±1.25	2.31	− *10.96*	*±3.39*	*10.17*
Bizygomatic diameter	21	137.14	±0.64	4.34	±0.45	3.16	− *6.74*	*±2.00*	*6.00*
Nasion-alveon height	22	74.18	±0.71	4.91	±0.50	6.62	+ *4.29*	*±1.00*	*3.00*
Orbital height, right	22	33.86	±0.26	1.84	±0.19	5.43	+ *4.64*	*±0.36*	*1.08*
Orbital breadth, right	22	42.68	±0.19	1.33	±0.14	3.11	− 0.10	±0.63	1.89
Nasal height	23	53.61	±0.45	3.19	±0.32	5.95	+ 2.35	±1.09	3.27
Nasal breadth	23	25.35	±0.21	1.47	±0.15	5.80	+ 0.60	±0.50	1.50
Minimum frontal diameter	22	101.63	±0.50	3.46	±0.35	3.42	− 2.11	±1.36	4.08
Length-breadth index	22	77.23	±0.19	1.34	±0.14	1.74	+ *5.40*	*±0.68*	*2.04*
Length-height index	23	70.70	±0.38	2.74	±0.27	3.88	+ 0.59	±1.23	3.69
Breadth-height index	22	91.41	±0.56	3.87	±0.39	4.23	− *6.15*	*±2.05*	*6.15*
Upper facial index	21	54.05	±0.44	2.96	±0.31	5.48	+ *4.80*	*±1.15*	*3.45*
Orbital index, right	23	82.00	±0.76	5.41	±0.54	6.60	+ *13.70*	*±1.35*	*4.05*
Nasal index	23	46.91	±0.51	3.62	±0.36	7.71	− 1.84	±1.80	5.40
Cranial module	22	160.91	±0.26	1.86	±0.18	1.15	+ 0.35	±0.40	1.20

which has been considered of Cro-Magnon origin, and by taking as the basis of comparison in the Guanche population only those crania which are of a size comparable to the Cro-Magnons, it is possible to avoid emphasizing apparent differences which have no racial significance.

In this table differences in measurements and indices of the Cro-Magnon and the macrocephalic Tenerife group have been printed in italics when they exceed three times the prob-

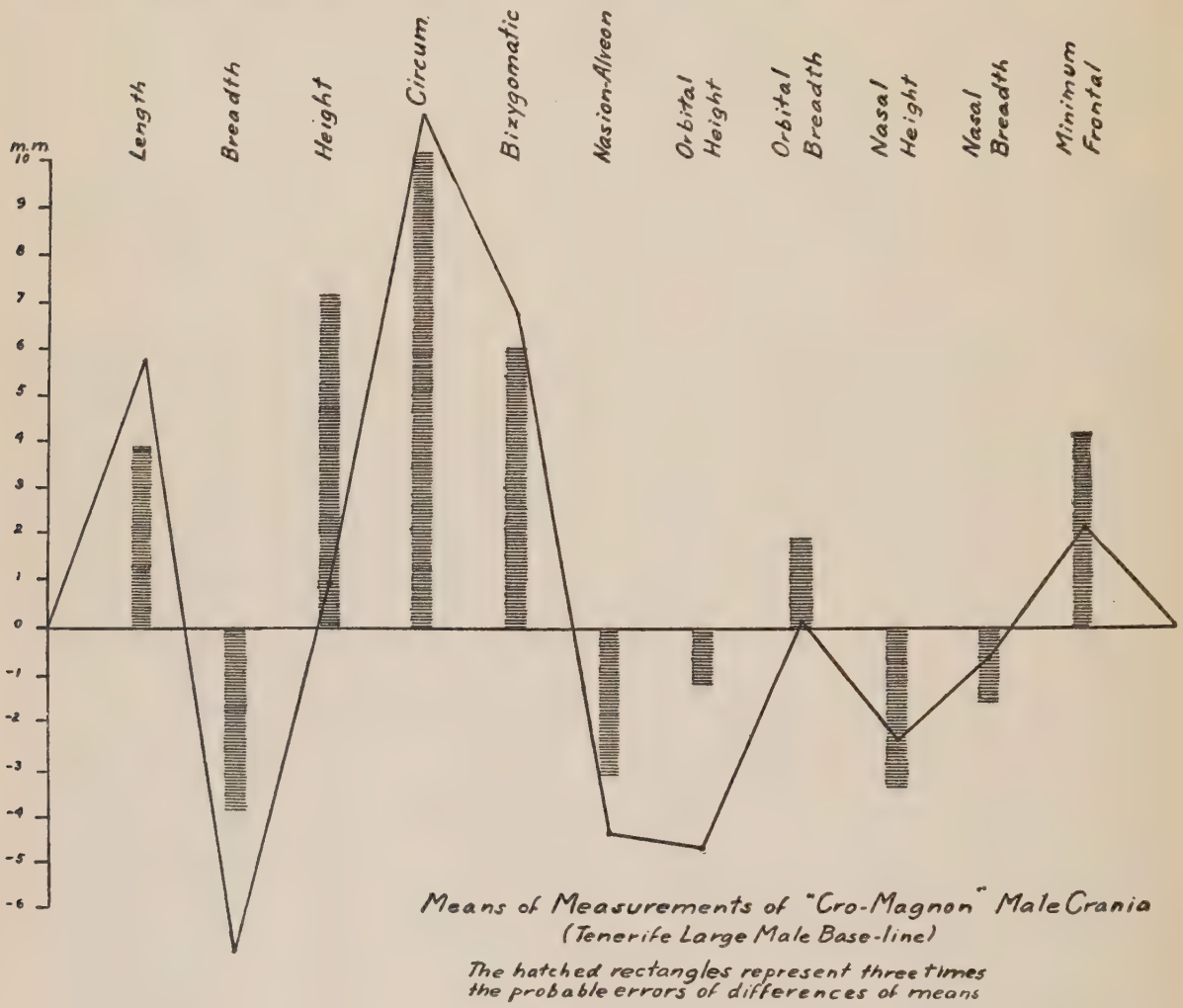


FIG. 17

able error of such differences. Such differences occur in six of the eleven measurements tabulated and in four of the seven indices. The large Tenerife crania average about 6 mm. shorter and 7 mm. broader than the Cro-Magnon crania, and have very much smaller circumferences. The mean basion-bregma heights are about the same. The height of the upper face is more than 4 mm. in excess of the mean Cro-Magnon height, and the height of the right orbit is almost 5 mm. greater in the Guanches. The nasal height in the Guanches

exceeds that in the Cro-Magnon group by more than twice the probable error of the difference. Other differences in the means occur, but are possibly insignificant.

Differences in the indices are no less striking. The Cro-Magnons have mean cranial indices of about 72, as against 77, the average of large Guanches. The length-height indices

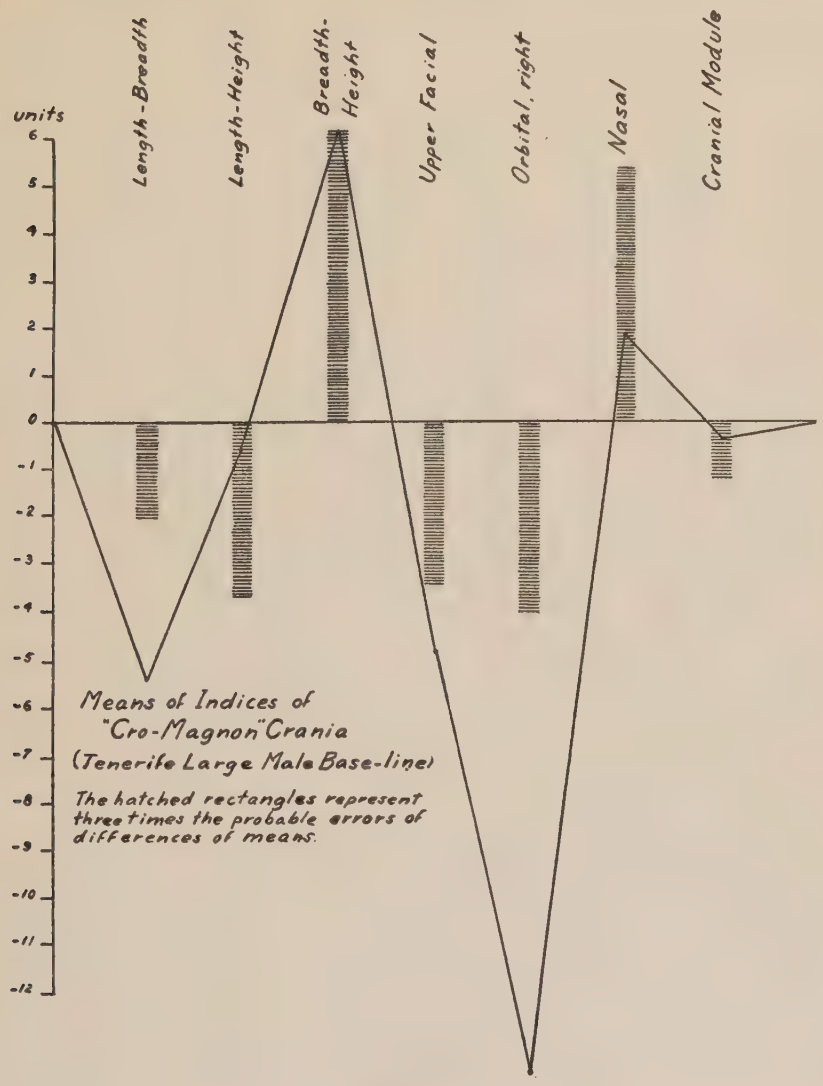


FIG. 18

are substantially the same, but the breadth-height index is far higher in the Cro-Magnon group. But it is in the facial indices that the most radical divergences are apparent. The Cro-Magnons are euryene, as they should be, with a mean upper facial index of about 49; but the big Guanches are almost leptene, with a mean index of 54. In other words the most of them have decidedly long faces in comparison with their breadth. Again, the differences in the orbital index are so great as to exceed ten times their probable error. The Guanches

have barely chamaeconch orbits, whereas the crania of the Cro-Magnon group have exaggeratedly low orbits relative to their breadth. I fail to see how any craniologist could assign these two series of crania to the same racial group. Their sole resemblances lie in their size (which is, in the case of the Guanches, due to conscious selection), in their tendency to chamaecephaly and to leptorrhiny. Yet this group of macrocephalic crania among the Guanches is not principally composed of those skulls to which I have assigned the type

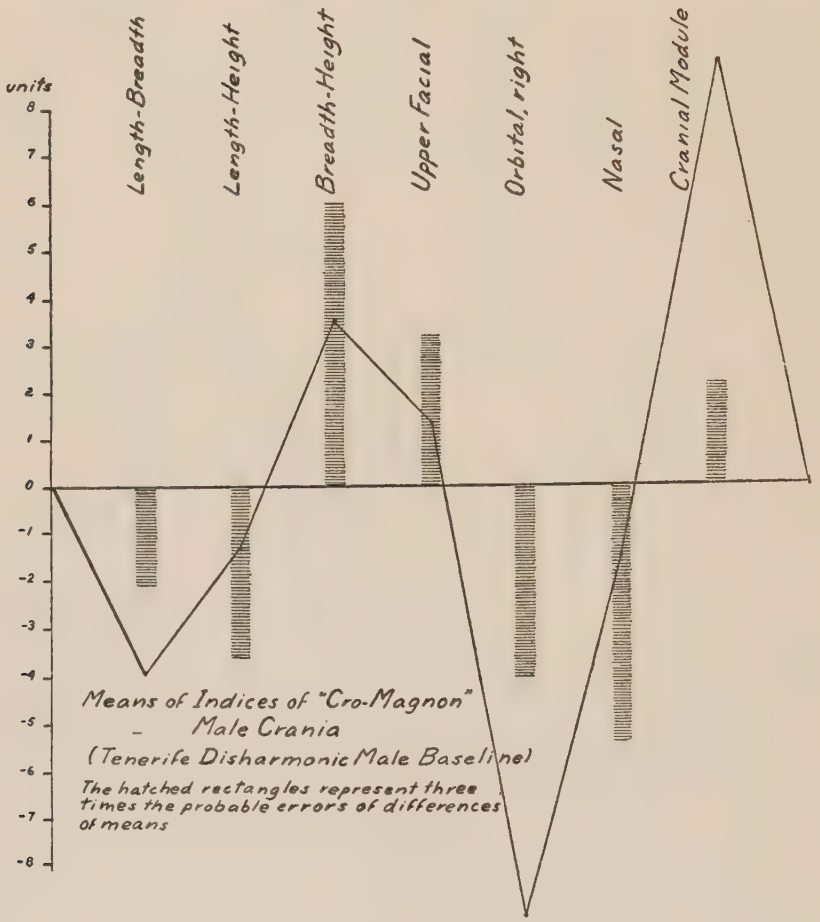


Fig. 19

classification " Nordic." In fact it includes only four " Nordic " crania out of a total of twenty-two.

Disharmonic Tenerife crania and Cro-Magnon crania. In order to give the Cro-Magnon hypothesis every possible chance to justify itself I propose to compare with the supposedly authentic Cro-Magnon series, all of the male Guanche crania which exhibit primary disharmony of the type in which a dolichocephalic brain-case is associated with a euryene (broad, short) face. Because there are only eight dolichocephalic euryene crania I have added to the disharmonic series all the mesocephalic euryene crania from Tenerife, making

a total series of thirty-two crania. Table 120 shows the result of such comparisons. The long-headed, disharmonic crania from Tenerife are not large crania. They show significantly smaller diameters than the Cro-Magnon crania. The Cro-Magnon crania have a mean cranial module of more than 160, whereas the disharmonic Guanches average 152. Of the 32 disharmonic crania only one exceeds the Cro-Magnon mean, with a cranial module of 163, and the three largest of the remainder have modules of 156, 157, and 158 respectively. At most there are not more than half-a-dozen of the large male series from Tenerife which in size and proportions closely resemble the Cro-Magnon crania. Furthermore, half of our disharmonic series are very platyrrhine, and the mean of the series is on the verge of platyrrhiny, whereas the "Cro-Magnon race" is supposed to have been leptorrhine or nearly so. The orbital index in our disharmonic series, while still chamaeconch or microseme, is nine index units higher in its mean than that of the Cro-Magnon group. It is evident from this comparison and from the preceding that if we select crania from our series to compare with the " Cro-Magnon race " on the basis of size we find that our large Canary crania are quite different from the fossil type. As a matter of fact our macrocephalic series includes only one long-headed disharmonic. If, on the other hand, we select crania by associated proportions of brain-case and face, we are confronted by a radical difference in size between our Guanche disharmonics and the Cro-Magnons, and have also to face the fact that even these small Cro-Magnon-like crania from Tenerife are rather markedly different from the authentic fossil type in length-breadth, orbital, and nasal proportions.

TABLE 120. Comparison of Means of Measurements of Dolichocephalic and Mesocephalic Disharmonic Tenerife Male Crania with Cro-Magnon Male Crania

		Disharmonic Tenerife		Difference from Cro-Magnon	
	No.	Mean p. e.	St. D. p. e.	Mean p. e.	3 × p. e.
Length, glabello-occipital	32	184.56 ±0.57	4.78 ±0.40	*−15.62 ±1.32*	*3.96*
Breadth, maximum	32	139.91 ±0.57	4.79 ±0.40	− 3.67 ±1.36	4.08
Height, basion-bregma	30	131.60 ±0.48	3.92 ±0.34	*− 7.29 ±2.34*	*7.02*
Diameter, bizygomatic	32	132.88 ±0.67	5.60 ±0.47	*−11.00 ±2.02*	*6.06*
Height, nasion-alveon	32	63.69 ±0.42	3.53 ±0.30	*− 6.20 ±0.82*	*2.46*
Length-breadth index	32	75.75 ±0.26	2.22 ±0.18	*+ 3.92 ±0.70*	*2.10*
Length-height index	30	71.47 ±0.21	1.72 ±0.15	+ 1.36 ±1.19	3.57
Breadth-height index	30	94.07 ±0.42	3.38 ±0.29	− 3.49 ±1.99	5.97
Upper facial index	32	47.84 ±0.22	1.82 ±0.15	− 1.41 ±1.06	3.18
Orbital index, right	32	77.31 ±0.45	3.99 ±0.34	*+ 9.01 ±1.31*	*3.93*
Nasal index	32	50.22 ±0.48	4.24 ±0.36	+ 1.47 ±1.79	5.37
Cranial module	30	151.69 ±0.45	3.68 ±0.32	*− 8.87 ±0.54*	*2.16*

Finally we may compare the variabilities of the authentic Cro-Magnons with those of our entire Guanche group, and of the two subgroups which we have selected as the most likely to approximate to the fossil race of the Vézère.

Differences in variabilities

TABLE 121. Differences in Variabilities between Guanche and Cro-Magnon Crania

	All Guanches	Large Guanches	Disharmonic Guanches	Cro-Magnon
Males				
Length, glabello-occipital	2.88±0.10	1.67±0.17	2.58±0.22	2.93±0.42
Breadth, maximum	3.48±0.10	1.68±0.17	3.42±0.29	4.43±0.61
Height, basion-bregma	3.71±0.12	3.59±0.36	2.97±0.26	7.34±1.17
Horizontal circumference	2.91±0.09	2.31±0.23	....	1.88±0.30
Arc, nasion-opisthion	3.31±0.10	....	....	2.28±0.38
Arc, transverse	3.10±0.10	....	....	3.61±0.70
Minimum frontal diameter	5.12±0.15	3.42±0.35	....	6.38±0.88
Bizygomatic diameter	4.09±0.13	3.16±0.33	4.21±0.35	5.50±0.93
Nasion-alveon height	6.69±0.21	6.62±0.67	5.54±0.47	4.62±0.73
Orbital height, right	6.01±0.19	5.43±0.55	....	3.86±0.61
Orbital breadth, right	5.01±0.20	3.11±0.32	....	6.40±1.01
Nasal height	6.84±0.21	5.95±0.59	.....	8.49±1.43
Nasal breadth	6.51±0.20	5.80±0.58	....	8.48±1.43
Length-breadth index	3.03±0.09	1.74±0.18	2.93±0.25	4.75±0.65
Length-height index	3.40±0.10	3.88±0.38	2.41±0.21	7.62±1.21
Breadth-height index	4.43±0.14	4.23±0.43	3.59±0.31	9.08±1.44
Upper facial index	5.91±0.27	5.48±0.57	3.80±0.32	9.06±1.53
Orbital index, right	6.10±0.18	6.60±0.66	5.16±0.44	8.64±1.30
Nasal index	9.43±0.28	7.71±0.77	8.44±0.71	14.91±2.57
Cranial module	2.70±0.08	1.15±0.12	2.43±0.21	0.88±0.14
Mean of Coefficients of Variation				
Measurements	4.59	3.88	..	4.94
Indices	5.00	4.40	4.11	7.82

From the preceding table it may be seen that the variabilities of the " Large Guanche " and the " Disharmonic Guanche " subgroups are in almost every case less than the corresponding variabilities of the total Guanche series, and that the Cro-Magnon coefficients of variation are in most cases a great deal higher than those of the whole Guanche series. In other words the variability of the " Cro-Magnon race " is considerably greater than that of our mixed Guanche population. Of course it should be remembered that the Cro-Magnon series is very small, and in it have been included various crania attributed at different times by different investigators to the " Cro-Magnon race."

The conclusion of this discussion is not that the Guanches of Tenerife show no affinities with the " Cro-Magnon race," but rather that there is, properly speaking, no " Cro-Magnon race." The crania which have been attributed to this " race " are more heterogeneous and variable than any " pure " racial type possibly could be. The only consistency shown by this racial type is in the large size of the crania, their short, broad faces, and their chamaeconch orbits. These three criteria are insufficient for the definition of a racial type, and there are practically no other indications of morphological or metrical similarity in Cro-Magnon crania.

Modern survivals of the " Cro-Magnon race." The present writer believes that the " Cro-Magnon race " is nothing but an arbitrary selection of the extra large specimens of a

fairly common, hybrid cranial form. Short, broad faces associated with dolichocephalic skull-vaults are common in the crania of many peoples. Australians normally have short, broad faces and dolichocephalic heads. So also have many Melanesians, Negroes, American Indians, Eskimo, Berbers, and modern Europeans.

In 1876, Professor Verneau, our most distinguished authority both on the "Cro-Magnon race" and on the Guanches, exhibited and described to the Anthropological Society of Paris two modern French crania which he considered practically pure types of the "Cro-Magnon race," reproduced by atavism.[1] One of these crania has a nasal index of 62! The other one has a length-breadth index of 78.7 and an upper facial index of 52.5. They have cranial modules of 156 and 158.3 respectively, whereas the average of the Cro-Magnon group exceeds 160. I do not, however, doubt that they bear a resemblance to the fossil type of the Vézère valley, for they are rather large and have broad faces. If they had been small crania exhibiting the same kind of disharmony, they would have been allowed to remain in obscurity. The present writer does not have to go far afield looking for Cro-Magnon types. He has in his own family an admirable example of a person who suits the requirements craniologically. This individual has a large, dolichocephalic head with a somewhat low-pitched vault and very flat temporal regions. The malars and zygomata are exceptionally prominent and outstanding, as are also the gonial angles. The nose is straight and narrow, and the chin is pointed and prominent. The face is not particularly short, but extremely broad, and I have no doubt that this woman would be hailed as an atavistic reproduction of the "Cro-Magnon race," if she were encountered by a French anthropologist in the Perigord. As a matter of fact she is of German and English ancestry. Her cephalic length is 195 mm., breadth 150 mm. This gives a length-breadth index of 76.92. The breadth of the face (bizygomatic) is 138 mm., and the nasion-alveon height is approximately 74 mm. (The position of nasion cannot be located with exactitude.) The upper facial index is thus 53.6, which is on the lower border of the leptene category. This small discrepancy in the matter of facial length, would not, I am sure, prevent her identification as a Cro-Magnon type. She answers the requirements quite as well as any of the natives of the Dordogne country or of the Canary Islands, whom I have been able to observe. I emphasize this example of a modern approach to a Cro-Magnon type because I am able to explain it on the basis of family inheritance. The father of the "Cro-Magnon" subject was dolichocephalic, with a very broad face and a straight, narrow nose. His malars were prominent but not unduly so (Plate 39, fig. 5). The mother was brachycephalic, with extremely prominent malars and a short, fleshy nose (Plate 39, fig. 7). The daughter inherited the dolichocephaly of the father and his leptorrhine nose; she inherited the very prominent and projecting malars of the mother, and great facial breadth from both parents (Plate 39, fig. 6).

It is thus apparent that dolichocephalic disharmonic types may occur, and frequently

[1] R. Verneau, Sur deux crânes modernes reproduisant le type de Cro-Magnon, Bull. Soc. Anthrop., Paris, s. 2, vol. 11, 1876, pp. 408–417.

do occur in European families of mixed racial origin, when one parent is dolichocephalic and mesene and the other parent is brachycephalic and euryene. Such types are even more common among the American Indians, especially those tribes resulting from the intermixture of the primary dolichocephalic Indian stock with the secondary brachycephalic and essentially Mongoloid Indian stock.

Origin of the Cro-Magnon type of hybrid. Western Europe was inhabited during the Palaeolithic period by a dolichocephalic race of great cranial length. This race is represented by such crania as Galley Hill, Brünn, Engis, Brüx, and probably Combe-Capelle. The breadth of the skull was moderate, and the breadth of the face a little more than the average in modern dolichocephalic Europeans. The scanty evidence in regard to the facial characteristics of this fundamental dolichocephalic type indicate that the upper facial height was small or medium. In the case of the Combe-Capelle specimen, the upper facial height is 70 mm. and the upper facial index is 52.2 or mesene. In the Chancelade skull the face is long (76 mm.), and the upper facial index approaches the leptene condition. The face of the Galley-Hill specimen was almost certainly short, and the faces of the so-called Grimaldi " race " are also short. We may perhaps expect a narrow face to be associated with a narrow brain-case, but the association of a long face with a long brain-case is a good deal rarer.

Somewhere either in Europe or perhaps in Asia there existed in the Palaeolithic period another race which was brachycephalic, probably with a low-pitched vault and a low breadth-height index. The Azilians of Ofnet and the Neolithics of Grenelle were probably representatives of this type. This race had short faces, and, in conformity with the breadth of the brain-case, broad faces. Both the short-faced dolichocephals and the short, broad-faced brachycephals tended to have short, broad orbits. I am of the opinion that the large Cro-Magnon type is a hybrid form produced by the crossing of these two races. It will be well to enlarge upon the reasons that lead to such an unorthodox conclusion.

It is now fairly well known that physical characters are usually inherited in rather small units. One may inherit, for example, an approximation to his father's head-length, combined with an approximation to his mother's head-breadth, and a minimum frontal diameter perhaps broader than that of either parent. The individual tends to be a kind of mosaic of small unit characters derived from his different ancestral strains. Some features appear to be inherited alternatively, without any sort of dominance, whereas others seem to conform to Mendelian rules, or at any rate to tend toward such conformity. I have dealt elsewhere in this investigation with the evidence as to the inheritance of cranial features in the Guanche population. It seems to be a fact that, in many instances, great breadth of the cranium and great breadth of the face tend to dominate over lesser breadths. If a hyper-dolichocephalic, mesene race crosses with a brachycephalic, euryene race, the resulting offspring are likely to offer the following mixed types as well as the original parental forms: (1) doli-

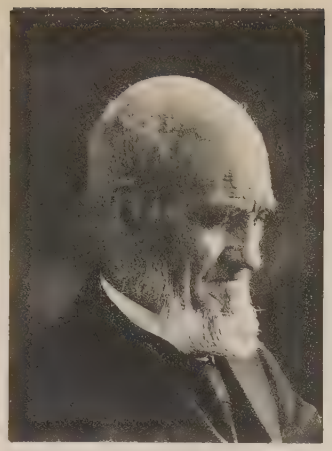


Fig. 1. Father of A.
Dolichocephalic, Long and
Broad Face

Fig. 2. Mother of A.
Dolichocephalic, Long Face
of Medium Breadth

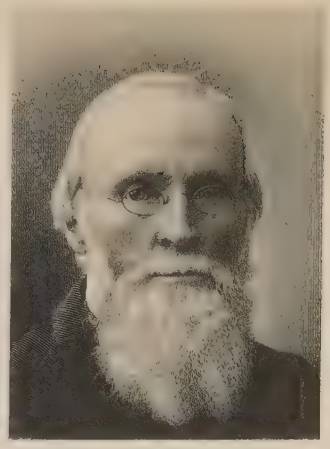


Fig. 3. Father of B.
Dolichocephalic, Long and
Broad Face

Fig. 4. Mother of B.
Brachycephalic, Broad and
Short Face

Fig. 5. A. Father of C.
Dolichocephalic, Long and
Broad Face

Fig. 6. C.
Long and Very Broad Face

Fig. 7. B. Mother of C.
Brachycephalic, Broad Face
of Medium Length

Inheritance of Broad Face in Conjunction with Dolichocephaly

chocephalic euryene, (2) brachycephalic mesene, (3) mesocephalic euryene, (4) mesocephalic mesene. If a large dolichocephalic, leptene type crosses with a small brachycephalic, euryene type, the possibilities of mixed offspring are the following: (1) large dolichocephalic euryene, (2) large dolichocephalic mesene, (3) small brachycephalic leptene, (4) large mesocephalic mesene, (5) large mesocephalic mesene. This is on the assumption that length and breadth measurements of head and face are inherited separately, without blending.

The Cro-Magnon type has the great head-length of the Galley Hill race, and in some of the examples its moderate or small breadth. In other examples, in which the parietal bosses are prominent, the posterior breadth of a brachycephalic type is combined with this great head-length, and may still result in dolichocephaly or low mesocephaly. The face, if inherited *in toto* from the dolichocephalic mesene ancestor, is naturally mesene. If the breadth of the face of the brachycephalic ancestor is inherited, the result is an euryene face.

The nasal index in skulls of the Cro-Magnon type is not consistently leptorrhine, but is frequently mesorrhine and chamaerrhine. In view of the correlation of nasal measurements with upper facial measurements we should expect short, broad noses to be associated with short, broad faces. There is apparently, however, a tendency for the leptorrhine condition to be dominant over the chamaerrhine condition. Chamaeconch orbits would be expected in the Cro-Magnon type in view of the small facial height and great breadth, and also because of the fact that both ancestral stocks were chamaeconch.

The flattening of the posterior portion of the parietals and of the upper portion of the occipital, which has been stressed as a characteristic feature of the Cro-Magnon " race," is an almost constant feature of crania which are the results of mixture between brachycephals and dolichocephals. It may be observed in numerous specimens of almost any large collection of European crania, and also in many American crania.

The large size of the Cro-Magnon type crania is usually stated as the first and most striking racial characteristic. When one has seen and handled hundreds of other European and non-European crania equally disharmonic with broad, short faces and low orbits, he is inclined to come to the conclusion that, because the original old man of Cro-Magnon happened to be a large individual, ingenuous craniologists have selected as " Cro-Magnons " the skulls of that small fraction of the population of mixed origin which happens to be dolichocephalic "disharmonic " and at the same time tall, entirely ignoring morphologically identical crania which happen to be of medium size or small. Surely size is a racial criterion of minor value. Nevertheless it must be admitted that most of the Late Palaeolithic crania which have been assigned to the " Cro-Magnon race " are not only disharmonic, but also unusually large, and that small disharmonic male crania are not usual in these early deposits. I am of the opinion that the great size of the Cro-Magnon Palaeolithic skeletons is in part a manifestation of heterosis or hybrid vigor, such as frequently occurs when separate races are first crossed and tends to diminish in successive generations. In the few studies of racial hybrids which have been carried out it has been demonstrated that the

early hybrid populations frequently exceed the stature of both of the parent races. Boas showed this to be the case in crosses between American Indians and French Canadians,[1] and Fischer found the same to be true in the case of the Rehoboth hybrids between Boers and Hottentots.[2] Anyone who has studied the subject of the distribution of stature in man should be acquainted with the fact that the tallest peoples are almost invariably those of obviously mixed racial origin. In this connection, the Scotch, the Albanians, the Nilotic Negroes, the Bantu of East Africa, and the Sikhs of India may be mentioned. An increase in stature is not a necessary consequence of racial intermixture in the hybrid. It appears to occur particularly in race mixtures when one of the parent stocks is rather tall, or when both are of somewhat more than average stature. In this connection the results of Davenport's researches upon the inheritance of stature are instructive. He found that short stature, as well as high stature, was heritable, and that short stature seemed to be due to certain growth-inhibiting factors which are absent in tall stocks.[3]

On the whole it appears reasonable to assume that the great stature of the Palaeolithic skeletons of the Cro-Magnon type may be referable to hybrid vigor, but we must also bear in mind the unconscious selection of Cro-Magnon types from the upper ranges of size, due to the fact that the original type-specimen was, perhaps fortuitously, a tall man. If we accept the foregoing arguments in favor of the hybridity of the Cro-Magnon " race," we avoid the difficulty of explaining the plethora of dolichocephalic disharmonics which is to be found in ancient and modern races, by any such cumbersome hypothesis as that of Paudler [4] who thinks that there is a tall, blond, Nordic Cro-Magnon race, and a short, dark, Mediterranean Cro-Magnon race, and that both of them are still well represented in the modern populations of Europe. Nor is there any necessity of interpreting occasional, very large, disharmonic crania as atavistic reproductions of the " Cro-Magnon race," an explanation which is scarcely applicable to the skulls of this type which are found in areas far beyond the possible range of the gifted fossil " race " of the Vézère. Furthermore, the recognition of Cro-Magnon hybridity obviates the difficulty of assuming that the small " Cro-Magnons " of today, in the Perigord, for instance, have suffered a diminution of stature in modern times through unfavorable environment, in the face of the obvious fact that the valley of the Vézère is a much more livable place than it was in the Aurignacian, Solutrian, and Magdalenian periods of the glacial retreat.

If anyone seeks for a verification of the foregoing hypothesis of the nature of the " Cro-Magnon race" it may be found in an examination of the 33 crania of Azilian age found at Ofnet in Germany. Here may be studied the brachycephalic parent type of the Cro-Magnon hybrid together with a thoroughly representative range of mesocephalic and doli-

[1] F. Boas, The Half-Blood Indian, Popular Science Monthly, vol. 45, 1894, p. 763. Cf. also L. R. Sullivan, Anthropometry of the Siouan Tribes, Proc. Nat. Acad. Sci., vol. 6, no. 3, pp. 131–134, March, 1920.

[2] E. Fischer, Die Rehobother Bastards, Jena, 1913, p. 65.

[3] C. B. Davenport, Inheritance of Stature, Genetics, vol. 2, 1917, pp. 314–387.

[4] F. Paudler, Anthropos, XII–XIII, 1917–1918, pp. 641–694.

chocephalic disharmonics. The three measurable female brachycephals have upper facial indices ranging from 35.9 to 45.8 (excessively euryene), orbital indices from 72 to 80, and nasal indices from 46.3 to 51.2. Seven of the eight mesocephals of this series are euryene and the eighth mesene, and these are in six cases also chamaeconch, while the nasal index in these mesocephals ranges from 41 to 78, with a strong majority of chamaerrhines. The three measurable dolichocephals of the series show facial indices varying from 49.6 to 52.6, orbital indices from 70.7 to 74.8, and nasal indices from 46.1 to 61.9. One of these dolichocephals (No. 21) is of such great size that it easily qualifies for the "Cro-Magnon race," while the other two could likewise be included without extending the already very generous limits of indicial and diametral variations which have been accorded to this type. The three most recent additions to the " Cro-Magnon race " are the skeletons found in the Aurignacian deposits at Solutré (Saône-et-Loire). From the incomplete descriptions which have been published [1] it appears that all three crania verge upon brachycephaly (indices 79.34, 79.12, and 77.7 respectively). The one of which the face is preserved is euryene, chamaeconch, and leptorrhine; but with a cranial index of 79.3 it can scarcely be called disharmonic. These crania are large and the statures of their possessors in life were high. The final discovery of brachycephalic or sub-brachycephalic, euryene " Cro-Magnons " seems to the present writer to furnish the ultimate confirmation of the hypothesis of the hybrid character of the " Cro-Magnon race."

[1] C. Depéret, F. Arcelin, L. Mayet, Sur la découverte d'hommes fossiles d'âge aurignacien, à Solutré (Saône-et-Loire), Comptes Rendus de L'Académie des Sciences, vol. 177, no. 15 (8 octobre 1923), pp. 618–624.

CHAPTER VIII

ASSOCIATION OF MORPHOLOGICAL AND METRICAL FEATURES

Theory of association. In order to determine the extent to which metrical and indicial features are correlated with the degree of development of certain observed morphological characters, a number of contingency tables have been drawn up in the case of the Tenerife male series of crania. The methods of investigation used involve the theory of association and, in some instances, the calculation of the coefficient of mean square contingency.

A simple method of testing the association of two attributes in a series is the comparison of the proportion of A's in the AB class with the proportion of A's in the total universe. In Table 122, for example, the association of degree of intricacy of the sutural pattern with the type of the length-breadth index is to be examined. In the upper left-hand corner of the table it is noted that 5 crania, or 25 per cent of all of the crania with simple sutural patterns, are dolichocephalic. At the bottom of the column we find that the total number of dolichocephalic crania is equal to 19.2 per cent of the whole series. It is therefore apparent that dolichocephalic crania occur slightly more often in those of simple sutural pattern than in the universe of Tenerife male crania. There is therefore a slight positive association of simple sutures with dolichocephalic crania. For if A represent crania with simple sutures, and B dolichocephalic crania, then if A and B are independent, $(AB) = \frac{(A)\,(B)}{N}$. But $(AB) = 5$ and $\frac{(A)\,(B)}{N} = 3.2$; or, to utilize the comparison of the percentages: $\frac{(AB)}{A} > \frac{(B)}{(N)}$. In the same table, on the other hand, very complex sutures (C) are negatively associated with mesocephalic crania because $\frac{(CD)}{(C)} = 51.14 < \frac{(D)}{N} = 71.61$.

Mean square contingency coefficient. If it is desired to test the general independence of attributes in a manifold contingency table, this may be done by the utilization of Pearson's mean square contingency coefficient. Yule's method of calculating this coefficient is as follows:[1]

Let the frequency of A_m's be denoted by (A_m), the frequency of B_n's by (B_n), and the frequency of objects possessing both characters by (A_mB_n). Then if A's and B's be completely independent in the universe at large, we must have for all values of m and n — $(A_mB_n) = \frac{(A_m)\,(B_n)}{N} = (A_m\,B_n)_o$. Then let $S = \sum \left\{ \frac{(A_mB_n)^2}{(A_mB_n)_o} \right\}$ or the sum of the ratios of

[1] G. Udney Yule, An Introduction to the Theory of Statistics, 3d ed., London, 1916, p. 64 sq.

the squares of the actual frequencies to their independence frequencies. Then if the mean square contingency coefficient be denoted by C, $C = \sqrt{\frac{S-N}{S}}$.

This coefficient then measures, on a scale ranging between 0 and 1, the mean extent to which the attributes in their associations in the table depart from independence.

Associations and contingencies.

TABLE 122. TENERIFE MALES. ASSOCIATION OF CRANIAL INDEX WITH COMPLEXITY OF SUTURAL SERRATION

Serration of Sutures	Cranial Index: Dolichocephalic	Mesocephalic	Brachycephalic	Total
Simple				
Number	5	13	2	20
Per cent of class	25.00	65.00	10.00	
Medium				
Number	17	74	10	101
Per cent of class	16.83	73.27	9.90	
Complex				
Number	18	69	7	94
Per cent of class	19.15	73.40	7.53	
Very Complex				
Number	4	8	2	14
Per cent of class	28.57	51.14	14.29	
Total				
Number	44	164	21	229
Per cent	19.21	71.61	9.17	

A study of the table above shows that there is no significant association of degrees of sutural complexity with divisions of the cranial index. Considering the size of the classes of suture serration, it is evident that the occurrence of dolichocephals, brachycephals, and mesocephals in any of them does not differ significantly from the percentages of these types of head-form in the entire series.

TABLE 123. TENERIFE MALES. FULLNESS OF TEMPORAL REGION AND DEVELOPMENT OF OCCIPITAL REGION

Occipital Region	Temporal Region: Compressed	Medium	Protuberant	Total
Protuberant				
Number	22	42	21	85
Per cent of class	25.88	49.41	24.71	34.00
Medium				
Number	30	75	39	144
Per cent of class	20.83	52.08	27.00	57.6
Steep				
Number	8	8	5	21
Per cent of class	38.10	38.10	23.83	8.4
Total				
Number	60	125	65	250
Per cent	24.00	50.00	26.00	

C = .114

The preceding table shows the association of varying grades of fullness of the temporal region with steep, medium, and protuberant occipital regions respectively. In every class of occipital region except the " steep " class, the percentage of each grade of fullness of the temporal region is approximately the same as the percentage of that grade in the whole series. There is, therefore, very little association. In the " steep " category of occiputs there is an excess of compressed temporals and a deficiency of medium temporal regions, but the numbers in this class are so small that the apparent association may be due to errors consequent upon the sampling process. The mean square contingency coefficient, .114, shows a slight relationship between observations upon the shapes of the two regions.

TABLE 124. Tenerife Males. Association of Basion-Bregma Height with Grade of Development of Supraorbital Ridges

Brow-Ridges	Basion-Bregma Height 119–124 mm.	125–129 mm.	130–134 mm.	135–139 mm.	140–144 mm.	145–149 mm.	Total
Absent							
Number	4	0	2	1	0	0	7
Per cent of class	57.14	0	28.57	14.67	0	0	
Small							
Number	1	21	16	7	3	0	48
Per cent of class	2.08	43.75	33.37	14.58	6.25	0	
Medium							
Number	7	28	52	40	4	1	132
Per cent of class	5.38	21.21	39.39	30.30	3.33	0.75	
Large							
Number	0	11	19	11	3	0	44
Per cent of class	0	25.00	43.18	25.00	6.82	0	
Very large							
Number	0	2	1	4	0	1	8
Per cent of class	0	25.00	12.50	50.00	0	12.50	
Total							
Number	12	62	90	63	10	2	239
Per cent	5.02	25.94	37.65	26.36	4.18	0.83	

Mean Basion-Bregma Height of Series 132 mm.
C = .489

The relation between the height of the skull and the development of supraorbital ridges is of some interest from an evolutionary point of view. A study of Table 124 shows that in this series there is a tendency for low skull-heights to be associated positively with undeveloped and small brow-ridges. This may be seen from a comparison of the percentages of crania in any height-grouping within a brow-ridge class, with the percentage of that height-group found in the entire series. Crania with medium brow-ridges do not seem to be significantly associated with any grouping of head-height. Crania with very large

brow-ridges seem to show a tendency toward positive association with large basion-bregma height. On the whole there is no evidence, however, that development of brow-ridges is very closely associated with basion-bregma height of the skull. The rather high contingency coefficient, .489, is due partially to an over-refinement of categories.

TABLE 125. TENERIFE MALES. DEVELOPMENT OF BROW-RIDGES AND SLOPE OF FRONTAL

Slope of Frontal	Brow-Ridges					
	Absent	Submedium	Medium	Large	Very Large	Total
Absent or protuberant						
Number	2	10	22	3	0	37
Per cent of class	5.41	27.03	59.46	8.11	0	14.74
Medium						
Number	5	40	92	30	6	173
Per cent of class	2.89	23.12	53.18	17.34	3.46	68.92
Retreating						
Number	0	5	17	16	3	41
Per cent of class	0	12.20	41.46	40.00	7.32	16.33
Total						
Number	7	55	131	49	9	251
Per cent	2.78	21.91	52.19	19.52	3.58	

C = .266

The table above shows the association of various grades of development of the brow-ridges with gradations of the slope of the frontal region in Tenerife males. It is obvious from this table that vertical or protuberant frontal regions are more commonly associated with undeveloped or small brow-ridges than with large brow-ridges or very large brow-ridges. Similarly, large or very large brow-ridges are much more commonly associated with retreating frontal regions than with vertical or protuberant frontal regions. The proportion of undeveloped brow-ridges in crania with vertical or protuberant frontal regions is 5.41 per cent, whereas the proportion of undeveloped brow-ridges in the entire series is only 2.78 per cent. The percentage of large brow-ridges in crania with retreating foreheads is 40, and in the entire series only 19.52.

The term " nasion depression " is probably a misnomer, for what appears to be a depression in the nasion region is often rather a prominence of glabella. It was with this fact in mind that Table 126 was compiled to show the association of the nasion depression with varying developments of supraorbital ridges. Of course large brow-ridges do not always imply a prominent glabella region, but in most crania these are associated features.

A glance at Table 126 shows that absence of nasion depression is strongly associated with lack of development of brow-ridges, and that the nasion depression tends to increase with larger development of the supraorbital ridges, so that deep nasion depressions are positively associated with large brow-ridges. The contingency coefficient .593, is high.

TABLE 126. TENERIFE MALES. ASSOCIATION OF NASION DEPRESSION WITH DEVELOPMENT OF BROW-RIDGES

Brow-Ridges	Nasion Depression: Absent	Submedium	Medium	Deep	Total
Absent					
Number	4	2	1	0	7
Per cent of class	57.14	28.57	14.29	0	
Submedium					
Number	8	32	11	1	52
Per cent of class	15.38	61.54	21.15	1.92	
Medium					
Number	2	29	77	22	130
Per cent of class	1.53	22.31	59.23	16.92	
Pronounced					
Number	0	3	24	20	47
Per cent of class	0	6.38	51.06	42.55	
Very Pronounced					
Number	0	0	2	7	9
Per cent of class	0	0	22.22	77.78	
Total					
Number	14	66	115	50	245
Per cent	5.71	26.93	46.93	20.40	

C = .593

TABLE 127. TENERIFE MALES. ASSOCIATION OF TYPE OF NASAL INDEX WITH CHARACTER OF LOWER BORDERS OF NASAL APERTURE

Lower Borders of Nasal Aperture	Type of Nasal Index: Leptorrhine[1] (x–46.5)	Mesorrhine (46.6–50.4)	Platyrrhine (50.5–x)	Total
Sharp				
Number	69	51	34	154
Per cent of class	44.80	33.11	22.07	61.31
Dull				
Number	29	29	25	83
Per cent of class	34.94	34.94	30.12	33.06
Indistinct				
Number	6	4	4	14
Per cent of class	42.86	28.57	28.57	5.57
Total				
Number	104	84	63	251
Per cent	41.43	33.46	25.09	

C = .099

[1] For convenience in statistical treatment I have altered slightly the divisions of the index in this table, considering the limits of mesorrhiny 46.6–50.4.

The table above shows the arrangement of divisions of the nasal index in relation to character of the lower borders of the nasal aperture. The percentage of leptorrhines in the class, with sharp lower borders of the nose, slightly exceeds that of the total series, while the percentage of leptorrhines with dull nasal borders is somewhat less than that of leptor-

rhines in the entire series. Similarly the percentage of platyrrhines with sharp nasal borders is somewhat less than the percentage of platyrrhines in the entire series and the percentage of platyrrhines with dull nasal borders exceeds the percentage of platyrrhines in the entire series. It will be observed, however, that the associations, though perceptible, are not very marked. We may conclude that there is a tendency in this series for sharp nasal borders to be associated with leptorrhiny and for dull lower borders of the nasal aperture to be associated with platyrrhiny.

TABLE 128. Tenerife Males. Association of Form of Nasal Bridge with Type of Nasal Index

Form of Nasal Bridge	Nasal Index: Leptorrhine (x–46.5)	Mesorrhine (46.6–50.5)	Platyrrhine (50.6–x)	Total
High, narrow				
Number	53	36	6	95
Per cent of class	55.79	37.89	6.32	39.41
High, medium				
Number	2	3	3	8
Per cent of class	25.00	37.50	37.50	3.31
High, broad				
Number	1	1	1	3
Per cent of class	33.33	33.33	33.33	1.24
Medium, narrow				
Number	3	0	1	4
Per cent of class	75.00	0	25.00	1.65
Medium, medium				
Number	36	34	26	96
Per cent of class	37.50	35.42	27.08	39.83
Medium, broad				
Number	3	5	14	22
Per cent of class	13.64	22.73	63.64	9.12
Low, narrow				
Number	2	1	2	5
Per cent of class	40.00	20.00	40.00	2.07
Low, medium				
Number	0	1	1	2
Per cent of class	0	50.00	50.00	0.83
Low, broad				
Number	0	2	4	6
Per cent of class	0	33.33	66.67	2.48
Total				
Number	100	84	57	241
Per cent	41.49	34.85	23.65	

C = .462

Table 128 shows the association of height and breadth of nasal bridge with type of nasal index. High, narrow nasal bridges are positively associated with leptorrhine indices,

as is shown by the excess of leptorrhine noses in the high, narrow class of nasal bridges, as compared with the percentage of leptorrhines in the whole series (55.79 per cent and 41.49 per cent respectively). Conversely there is a deficiency of platyrrhine indices in the high, narrow class of nasal bridges (6.32 per cent as compared with 23.65 per cent of platyrrhines in the whole series). Again, noses of medium height and with broad bridges show a strong positive association with platyrrhiny (63.74 per cent as compared with 23.65 per cent of platyrrhine indices in the entire series). The association of low, broad nasal bridges with platyrrhiny is even more marked (66.67 per cent), but here the numbers are so small as to cast doubt upon the validity of the result.

If we consider height of the nasal bridge regardless of breadth, we find that the association with leptorrhiny of high bridges is slightly less than that of high, narrow bridges. While high bridges still show a marked association with leptorrhiny (52.83 per cent against 41.49 per cent), medium-height bridges are negatively associated (34.43 per cent against 41.49 per cent) and low bridges show a still stronger negative association with leptorrhiny (15.38 per cent against 41.49 per cent). Again, the associations of high, medium, and narrow noses with mesorrhiny are insignificant, if breadth of the nasal bridge is left out of account. Similarly the negative association of high bridges with platyrrhiny is less than that of high, narrow bridges, and the positive associations of bridges of medium height and low bridges with platyrrhiny are much reduced when breadth of the nasal bridge is disregarded. It is perhaps legitimate to conclude that the breadth of the nasal bridge is probably more closely associated with the nasal index than is the height.

TABLE 129. Tenerife Males. Association of Alveolar Prognathism with Character of Lower Borders of Nasal Aperture

Alveolar Prognathism	Lower Borders of Nasal Aperture: Indistinct	Dull	Sharp	Total
Pronounced				
Number	3	20	22	45
Per cent of class	6.67	44.44	48.89	21.43
Medium				
Number	7	32	57	96
Per cent of class	7.29	31.25	59.37	45.71
Submedium				
Number	3	11	40	54
Per cent of class	5.56	20.37	74.07	25.71
None				
Number	1	4	10	15
Per cent of class	6.67	26.67	66.67	7.64
Total				
Number	14	67	129	210
Per cent	6.67	31.90	61.43	

C = .188

Ill-defined lower borders of the nasal aperture are a primitive feature often found in crania with pronounced alveolar prognathism. In male crania from Tenerife the lower borders of the nasal apertures are prevailing sharp, but some degree of alveolar prognathism is usually present. The preceding table is the result of an attempt to ascertain whether or not any particular form of lower borders of nasal aperture is likely to be associated with subnasal protrusion. The number of crania with indistinct lower borders is inconsiderable, and

TABLE 130. TENERIFE MALES. ASSOCIATION OF TYPE OF GNATHIC INDEX WITH ALVEOLAR PROGNATHISM

Alveolar Prognathism	Gnathic Index $\frac{\text{(Basion-alveon length} \times 100)}{\text{Basion-nasion length}}$ Hyper-Orthognathous (x–89.9)	Orthognathous (90–97.9)	Mesognathous (98–102.9)	Prognathous (102–x)	Total
Absent					
Number	5	6	0	0	11
Per cent of class	45.45	54.55	0	0	
Slight					
Number	10	41	3	0	54
Per cent of class	18.52	75.93	5.56	0	
Medium					
Number	5	68	14	1	88
Per cent of class	5.68	77.27	15.91	1.14	
Pronounced					
Number	4	25	15	1	45
Per cent of class	8.89	55.56	33.33	2.22	
Total					
Number	24	140	32	2	198
Per cent	12.12	70.70	16.11	1.01	

C = .364

there is no demonstrable relationship of this class of borders with prognathism, since the percentage of crania with indistinct lower borders in each gradation of alveolar prognathism does not differ substantially from the percentage of crania with indistinct lower borders in the entire series. In crania with dull lower borders, however, there appears to be an excess in the class with pronounced alveolar prognathism (44.44 per cent as compared with 31.90 per cent in the entire series), and a deficiency in the classes with submedium or no prognathism (20.37 per cent and 26.67 per cent respectively as against 31.9 per cent in the whole series). Similarly in the class with sharp lower borders of the nasal aperture there is a deficiency in the grade of crania with pronounced prognathism, while there are excessive proportions of crania with sharp lower borders in those grades of crania in which alveolar prognathism is submedium or absent. It is apparent therefore, that sharp lower borders of the nasal aperture are positively associated with lack of alveolar prognathism and slight alveolar prognathism, while dull lower borders are positively associated with pronounced alveolar protrusion. But these associations are by no means complete, as may be judged from the fact that there are in the total series absolutely twice as many crania in which

sharp borders are associated with pronounced alveolar prognathism as the number in which sharp borders are associated with a total lack of alveolar protrusion.

Table 130 represents an attempt to determine the association of different classes of the gnathic index with observations upon the development of alveolar prognathism. The percentage of all hyperorthognathic crania in the series is 12.12, but the percentage of such crania in the class in which there is no alveolar prognathism is 45.45. Similarly there are no mesognathous or prognathous crania in the class of skulls in which alveolar prognathism is absent. Thus lack of alveolar prognathism is strongly associated with an orthognathic condition. Further, the percentage of mesognathous crania in the series is 16.11, but the percentage of mesognathic crania in the class of skulls in which alveolar prognathism is pronounced is 33.33. This indicates a positive association of pronounced alveolar prognathism with mesognathism. The prognathous crania in the series are too few to be significant in their association with alveolar prognathism. It should be noticed that there are no less than 4 crania in the hyperorthognathous class, and 25 crania in the orthognathous class, which show pronounced alveolar prognathism. Almost 65 per cent of the crania which show pronounced alveolar prognathism are orthognathous, on the basis of the gnathic index. This is probably due to the fact that the alveolar or gnathic index does not take into account facial height, but only the relation of the basion-prosthion line to the basion-nasion line. Prognathism, on the other hand, concerns itself also with the height of the face. Given the same gnathic index in two skulls, if one has a greater nasion-prosthion length than the other, one or the other will probably show a much greater alveolar protrusion. In other words the alveolar or gnathic index is a rather unsatisfactory measure of prognathism, because a long-faced skull with a low gnathic index may in reality be prognathous.

TABLE 131. Tenerife Males. Association of Type of Cranial Index with Grade of Alveolar Prognathism

Alveolar Prognathism	Cranial Index			Total
	Dolichocephalic	Mesocephalic	Brachycephalic	
Absent				
Number	3	9	3	15
Per cent of class	20.00	60.00	20.00	
Slight				
Number	14	42	2	58
Per cent of class	24.14	72.41	3.45	
Medium				
Number	25	57	6	88
Per cent of class	28.41	64.77	6.82	
Pronounced				
Number	6	33	6	45
Per cent of class	13.33	73.33	13.33	
Total				
Number	48	141	17	206
Per cent	23.30	68.45	8.25	

The preceding table shows the independence of alveolar prognathism, as noted by observations, and the cranial index. Brachycephals seem to show a disproportionate percentage both of crania with no alveolar prognathism and of crania with pronounced alveolar prognathism, but this is quite possibly due to the paucity of crania in this index classification.

Conclusions on association of morphological and metrical features in Tenerife males. The following conclusions may be drawn from studies of the associations and contingencies of various metrical and morphological features in Tenerife males:

(1) The degree of sutural complexity seems to be independent of the cranial index as divided into brachycephalic, mesocephalic, and dolichocephalic categories.

(2) The fullness of the temporal regions seems to show no relationship of significance to the flatness or protuberance of the occipital region.

(3) Low skull-height tends to be associated with small development of brow-ridges and large skull-height with large brow-ridges.

(4) Retreating frontal regions are associated with large brow-ridges and protuberant frontal regions with small or undeveloped brow-ridges.

(5) Deep nasion depressions are strongly associated with large brow-ridges, and shallow or slight nasion depressions with small or undeveloped brow-ridges.

(6) There is no significant relationship between the type of the nasal index and the development of the lower borders of the nasal aperture.

(7) High and narrow noses are positively associated with leptorrhine indices. Low and broad noses are positively associated with platyrrhine indices. Mesorrhine indices are not significantly associated with any form of the nasal bridge.

(8) Slight alveolar prognathism and orthognathism tend to be associated with sharp lower borders of the nasal aperture.

(9) Hyperorthognathism as expressed by the gnathic index is strongly associated with absence of alveolar prognathism. Mesognathism and prognathism are associated with alveolar prognathism.

(10) There is no significant relationship between the type of the length-breadth index and the development of alveolar prognathism.

TABLE 132. Tenerife Males. Coefficients of Contingency of Morphological and Metrical Features

	Coefficient of Mean Square Contingency
Fullness of Temporal Region and Curve of Occipital Region	.144
Development of Brow-Ridges and Basion-Bregma Height (classified by 5 mm. intervals)	.489
Development of Brow-Ridges and Slope of Frontal Region	.266
Development of Brow-Ridges and Depth of Nasion Depression	.593
Type of Nasal Index and Lower Borders of Nasal Aperture	.099
Type of Nasal Bridge and Type of Nasal Index	.462
Type of Gnathic Index and Observation of Alveolar Prognathism	.364

CHAPTER IX

DETERMINATION OF MORPHOLOGICAL TYPE

The morphological observations upon the Canary Islands crania consisted of the estimation of the degree of morphological development of a large number of features on each individual skull, and the classification of each skull according to my judgment as to its racial affinities. In the latter classification, skulls were designated as " Mediterranean," " Nordic," " near Nordic," " Alpine," " Negroid," etc. A large group, including almost half of the series, was designated as " Guanche," because it seemed to me to show an essentially local combination of features derived from a blend of identifiable racial elements.

First I have endeavored to separate the series into morphological cranial types on the basis of similar combinations of individual features in the various specimens. I have then taken the classifications as to " type " and have investigated their morphological and metrical significance. Finally, an effort has made to ascertain the racial affiliations of these assigned " type " designations by comparing the metrical features of the several types with crania of known racial antecedents.

MORPHOLOGICAL TYPE ON THE BASIS OF GRADATION OF OBSERVED CHARACTERS

In the observation of individual crania of any series a number of important morphological features are recorded, according to their presence or absence or the grade of their development. Ordinarily these observations are expressed in the following categories: absent, small, medium, pronounced, very pronounced. Naturally the judgment of the observer is less precise and consistent than a caliper measurement, but the morphological features which are observable but not measurable are probably quite as important as any measurements of dimensions, or any indices derived from the latter. As there are ordinarily five categories of development of a morphological feature, it is evident that these grades may be expressed numerically on a scale from -2 to $+2$. It is obvious also that a pronounced development of certain features, such as frontal height or sutural intricacy, indicates a high or superior anthropological status, whereas the pronounced development of others, such as alveolar prognathism and brow-ridges, indicates, on the contrary, a primitive or inferior anthropological status. If, therefore, a base line of 0 be taken as the equivalent of an average European development of a specified character, and if all of the features to be graded are arranged in such a way that superior development is expressed on a vertical scale as $+2$ and inferior development as -2, it is possible to draw for each cranium a curve of individual variation of morphological features.

In the present instance the following scheme was utilized.

TABLE 133. SCHEME OF GRADATION OF MORPHOLOGICAL FEATURES

Character	Primitive Very Low −2	Submedium −1	Medium 0	High +1	Advanced Very High +2
1. Frontal Height	very low	submedium	medium	high	very high
2. Frontal Slope	very pronounced	pronounced	medium	slight	absent
3. Sagittal Height	very low	low	medium	high	very high
4. Temporal Fullness	compressed	flat	medium	full	bulging
5. Occipital Protrusion	very pronounced	pronounced	medium	slight	absent
6. Serration of Sutures	simple	submedium	medium	complex	very complex
7. Wormian Bones	none	few small	several small	many	very many small or large
8. Parietal Foramina	none	one small	two small	two medium	two large
9. Mastoids	very small	small	medium	large	very large
10. Brow-Ridges	very large	large	medium	small	absent
11. Nasion Depression	very deep	deep	medium	slight	absent
12. Height of Nasal Bridge	very low	low	medium	high	very high
13. Breadth of Nasal Bridge	very broad	broad	medium	narrow	very narrow
14. Lower Borders of Nasal Aperture	absent	indistinct, small spine	medium, medium spine	sharp, medium spine	sharp, large spine
15. Suborbital Fossae	absent	slight	medium	deep	very deep
16. Size of Malars	very large	large	medium	small	compressed
17. Size of Zygomata	very large	large	medium	small	compressed
18. Alveolar Prognathism	very pronounced	pronounced	medium	slight	absent
19. Shape of Palate	narrow U	broad U	parabolic	hyperbolic	elliptical
20. Height of Palate Roof	very low	low	medium	high	very high
21. Size of Styloids	absent	small	medium	large	very large
22. Depression of Petrous Parts	absent	small	medium	marked	very marked

Probably some anthropologists will dissent from the morphological values I have assigned to certain characters. For example, I have rated very pronounced occipital protrusion as a very low or primitive character, and lack of occipital protrusion as a very high character. All that this means is that the most primitive human types usually have very protruding occiputs, while in the bulk of the more highly evolved modern types occipital protrusion tends to be slight. Again it may be objected that Wormian bones in great numbers are not indicative of advanced development, but may even be a pathological feature. But Wormian bones are very rare in the most primitive skull types, and become increasingly frequent in more highly evolved crania. In some of the features listed the contrast between low and high is to be taken to mean that the latter is regressive or degenerative, as in the case of high palatal roof, elliptical palate form, small compressed malars. All these are advanced characters because they are related to atrophy of the masticatory apparatus, but they are, in a sense, degenerative characters.

Such an arrangement of the gradations of observed morphological features, crude though it doubtless is, has the merit of being adapted to graphical treatment, and possibly to some extent to statistical and mathematical analysis. Such individual curves were drawn for 247 of the male crania from Tenerife and samples of the results are found in Figure 20. Most of the curves are not reproduced, because their significance does not seem to make it worth while. As a matter of fact, no two of them are alike. Laborious comparisons and superimpositions have proved that. It requires also no extensive knowledge

of the theory of probability to realize that the chances of similarities are slight when one is dealing with 22 characters, each of which has 5 possible gradations. Coincidences may be observed in certain parts of the curve, especially where a number of morphological features that are normally interdependent or in some way associated with each other, are

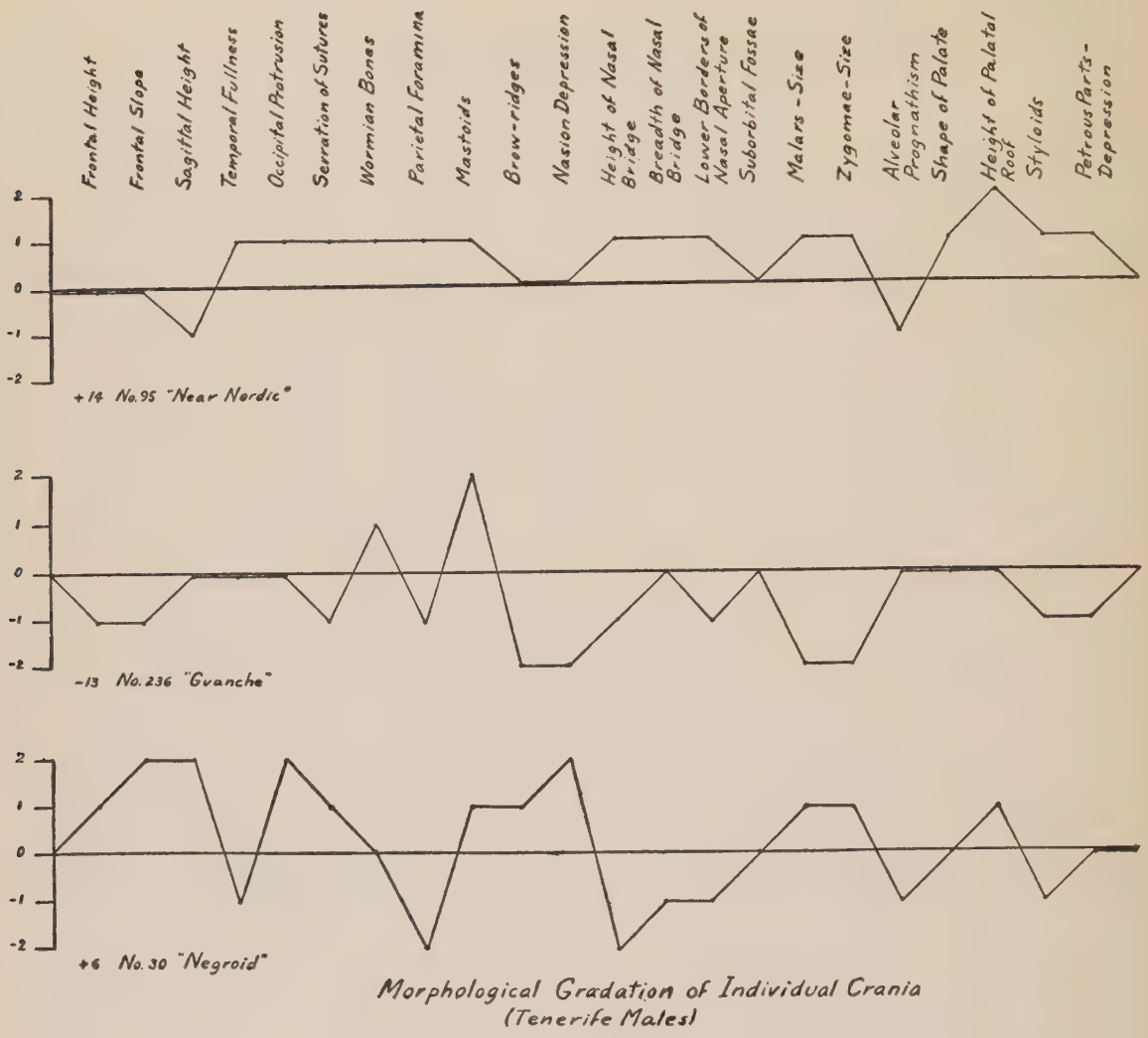


FIG. 20

plotted in the same portion of the curve. For example, marked slope of the forehead is likely to be associated with low frontal height, large brow-ridges, and marked nasion depression, so that there are many coincidences in this portion of the curves. But there is scarcely an example of marked similarity throughout the whole range of 22 characters in any two crania of the 247 plotted. This may be due, to some extent, to the difficulty in maintaining one's criteria of gradation constant throughout a series of morphological

observations. But I am inclined to think that the basic cause is to be sought in the manner of inheritance of morphological features. The offspring receives a heterogeneous legacy of morphological characters, the most of which are unlinked, and which are the result of the individual and racial diversities of his progenitors. In other words, in a mixed race it is about as difficult to establish fundamental morphological types based upon a summation of a large number of observed characters, as it is to establish craniometric types based upon a similar combination of the gradations of cranial indices.

Grouping according to mean gradation. Having convinced myself of the futility of trying to divide these observation graphs into a few fundamental types on the basis of coincidences or similarities, I attempted to seriate the graphs by assigning to each an average

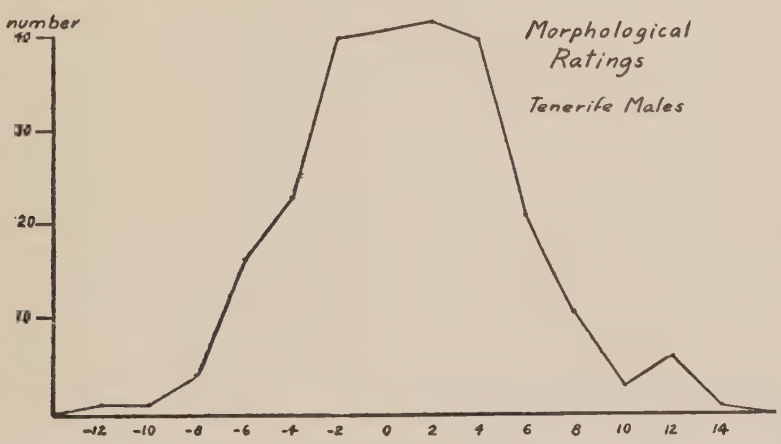


FIG. 21

morphological value. This was done by taking the algebraic sum of the plus and minus deviations of the 22 characters graded in each graph. Thus a skull which showed the highest grade of development in all of these features would be assigned an average value of +44, one of the lowest rating in every character −44, and an average skull in every respect would receive the value of 0: in this way I secured a seriation of graphs from −13 to +14. The nature of this distribution may be seen from the frequency polygon (Fig. 21).

The mean of this series of morphologically graded crania is +.448; the standard deviation is 4.46 morphological units, and the entire distribution falls within a range of $\pm 3\sigma$, or six times the standard deviation. It appears to be of the nature of a chance distribution and seems to approximate to normality. There is no indication of any sharp differentiation into morphological types.

As a rough means of determining whether any relationship obtains between morphological grade and combinations of indicial type, the crania of the series from −13 to −5 inclusive and from +5 to +14 have been tabulated by groups, and compared with the whole series in respect to their distribution in indicial combinations. The result may be seen in Table 134. The small subgroups show a scattering distribution through the subdivisions of length-breadth index, length-height index, breadth-height index, and upper facial index. The numbers of the subgroups are too few to be

significant in such quadruple index combinations. Taking merely the length-breadth index we find that the low morphological subgroup includes 10, or 43.49 per cent, of dolichocephals; the high morphological group 18.42 per cent (7 crania); and the whole series 60 crania or 25.86 per cent. There are no brachycephals in the low morphological group; 2, or 5.26 per cent, in the high morphological group; and 15, or 12.06 per cent, in the whole series.

TABLE 134. INDEX COMBINATIONS OF TENERIFE CRANIA BY MORPHOLOGICAL GRADES

	Morphological Grade		
	−13 to −5	+5 to +14	Total Series
Dolichocephals			
Number	10	7	60
Per cent	34.49	18.42	25.86
Dolicho-chamae			
Number	2	3	21
Per cent	6.90	7.89	9.05
Dolicho-ortho			
Number	8	4	39
Per cent	27.59	10.53	16.81
Mesocephals			
Number	19	29	157
Per cent	65.52	76.31	62.06
Meso-chamae			
Number	6	12	52
Per cent	20.69	31.58	22.41
Meso-ortho			
Number	13	15	92
Per cent	44.83	39.47	39.65
Meso-hypsi			
Number	0	2	13
Per cent	0	5.26	5.60
Brachycephals			
Number	0	2	15
Per cent		5.26	6.46
Brachy-chamae			
Number	0	1	4
Per cent	0	2.63	1.72
Brachy-ortho			
Number	0	1	11
Per cent	0	2.63	4.74
Total			
Number	29	38	232
Per cent of series	12.50	16.39	

The minimum-deviating skull. Skull No. 153 exhibits the curve of individual morphological variation which shows the fewest plus and minus deviations from the hypothetical 0 base line and which therefore approaches most closely the imaginary morphological type, the "average European male skull" from which deviations are observed. It is of some interest to note that this skull has received the type classification, "near Nordic." The following comparison of its indices with those of the means of the entire group and of the Nordic subgroup is instructive.

It will be noticed that this skull in its indices approximates in general more closely to the "Nordic" and "Mediterranean" subgroup means than to the average of the entire se-

TABLE 135. INDICES OF THE MINIMUM MORPHOLOGICALLY DEVIATING SKULL

	No. 153	"Nordic" subgroup	"Mediterranean" subgroup	Entire series
Length-breadth	75.14	76.23±0.18	76.06±0.25	75.99±0.10
Length-height	73.48	70.32±0.20	70.47±0.10	71.67±0.44
Breadth-height	97.79	92.33±0.31	94.33±0.55	93.52±0.18
Upper facial	54.96	54.49±0.20	54.85±0.42	52.14±0.14
Nasal	45.28	45.63±0.28	47.41±0.72	47.46±0.19
Mean orbital	86.25	83.31±0.33	85.61±0.71	81.42±0.21
Maxillo-alveolar	126.92	120.00±0.61	117.57±1.06	119.96±0.31
Gnathic	91.43	93.46±0.28	93.53±0.71	93.25±0.15

ries. It is on the lower border of mesocephaly; it is orthocephalic and on the upper limit of metriocephaly; it is on the border between the mesene and the leptene facial proportions; it is leptorrhine, mesoconch, and strongly brachyuranic. In every one of these indices this minimum morphological deviate falls within the same index subdivision as the modal number of crania in the whole series. In its height indices it diverges strongly from the means of the group and of the subgroups. This is because it happens to be a somewhat shorter skull (length 180 mm.) than the average of the series (186 mm.). In its facial proportions its affinities are with the long, narrow-faced "Mediterranean" and "Nordic" types rather than with the short, broad-faced Guanche type. Its nasal index is close to the low mean of the "Nordic" group. Its orbits are high relative to their breadth, resembling most closely the "Mediterranean," and then next, the "Nordic" subgroups. Its palate, in its shortness relative to its breadth, is somewhat excessive and nearer to the Nordic type than to the other groups, while the gnathic index shows a more marked orthognathism than is found in the series or in the subgroups. If one were to assign this skull to a type, on the basis of the indices, he would almost certainly describe it as "nearly Nordic," which is the category to which it was originally assigned on the basis of the morphological observations.

The morphological deviations of this skull are −2 and +2, giving a mean morphological rating of 0. The minus deviation is in one character, the total absence of Wormian bones; the plus deviations are in two characters, pronounced depression at nasion, and sharp lower borders of the nasal aperture. Otherwise this skull presents in all morphological features a medium development according to my judgment. That this skull should approximate metrically to something between a Mediterranean and Nordic type is natural since observations are based on "average European characters." I consider the indicial rating of this skull an indication of the general validity of my observational norm, and its independent assignment to the "Nordic" group a vindication of judgments as to type.

Type classification and morphological rating. In order to ascertain whether or not assigned morphological type shows any relationship to mean morphological rating the means and standard deviations of morphological ratings according to type were calculated and also the correlation ratio of morphological type on mean morphological rating.

TABLE 136. Mean Morphological Ratings of Crania Classified by "Type"

	Total Series	"Guanches"	"Nordics"	"Mediterraneans"	Others
Mean.....	0.448±0.190	−0.290±0.255	1.657±0.337	2.210±0.428	0.810±0.818
Standard Deviation	4.46±0.13	4.47±0.18	4.27±0.24	2.76±0.30	4.84±0.58
Excess of means...	0	−0.738	1.209	1.762	0.362
Twice p.e.	.....	0.510	0.674	0.856	1.636
Thrice p.e.	.....	0.765	1.016	1.284	2.454
Number of crania..	250	142	73	19	16

The table above shows that the mean morphological rating of the whole series of Tenerife males on a scale of −13 to +14 is .448±.190. The mean of the " Guanche " subgroup is −.290. It differs from that of the entire group by almost three times the probable error of its own mean. This difference is probably more than can be reasonably attributed to the sampling process. The mean of the " Nordic " subgroup is 1.657 and it differs from that of the entire series by more than three times its own probable error. The mean of the " Mediterranean " subgroup is 2.210 and differs also from that of the entire group by more than three times its own probable error. The mean of the small residual miscellaneous group is not significantly different from that of the entire series. The correlation ratio of "type" on mean morphological rating is .071. The small value of this correlation ratio is due to the preponderant size of the "Guanche" subgroup, which differs only slightly from the mean of the entire series, and to the lack of differentiation of the miscellaneous group.

On the whole it may be concluded from the discussion above that the " Nordics " and " Mediterraneans " of this male Tenerife series show higher average morphological ratings than do the " Guanche " types. This establishes a somewhat indefinite, but nevertheless real, morphological differentiation between our types, which were classified on the basis of general morphological observations.

MORPHOLOGICAL JUDGMENTS OF RACIAL TYPE

Differentiation of type subgroups from total Tenerife male series.

After the measurements and observations of each cranium were completed I assigned it to one of several types according to my impression of the morphological features which characterized it. Table 137 is an attempt to determine whether there is any association of the cranial type thus determined with combinations of the length-breadth and upper facial indices. It may be observed that most of the male crania were assigned to a type called " Guanche " or to a type called " Nordic." It is also apparent that there is no consistent association holding for all the index combinations. " Guanche " types include the entire range from dolichocephalic to brachycephalic, and from euryene to leptene. Nevertheless some association is discernible in the subclasses. All of the dolicho-euryene crania, with one exception, are assigned to the "Guanche" type, and none to the "Nordic" type. Most of the dolicho-leptene class are designated " Nordic," and almost all of the meso-euryene

TABLE 137. Tenerife Males. Association of Observed Cranial Type with Combination of Length-Breadth and Upper Facial Index

Length-Breadth and Upper Facial Index	Observed Type of Skull "Guanche"	"Nordic"	"Mediterranean"	G × N.	G × M.	Others	Total
Dolicho-Euryene							
Number	8	0	0	0	1	0	9
Per cent of class	88.89	0	0	0	11.11	0	
Dolicho-Mesene							
Number	19	12	2	0	0	0	33
Per cent of class	57.58	36.36	6.06	0	0	0	
Dolicho-Leptene							
Number	1	8	0	2	0	0	11
Per cent of class	9.09	72.73	0	18.18	0	0	
Meso-Euryene							
Number	18	1	0	1	0	1	21
Per cent of class	85.71	4.76	0	4.76	0	4.76	
Meso-Mesene							
Number	44	19	5	2	1	1	72
Per cent of class	61.11	26.39	6.94	2.78	1.39	1.39	
Meso-Leptene							
Number	12	18	6	0	1	3	40
Per cent of class	30.00	45.00	15.00	0	2.50	7.50	
Brachy-Euryene							
Number	4	0	0	0	0	2	6
Per cent of class	66.66	0	0	0	0	33.33	
Brachy-Mesene							
Number	5	3	0	0	0	0	8
Per cent of class	62.50	37.50	0	0	0	0	
Brachy-Leptene							
Number	1	0	0	0	0	0	1
Per cent of class	100.00	0	0	0	0	0	
Total							
Number	112	61	13	5	3	7	201
Per cent	55.72	29.90	6.46	2.48	1.49	3.48	

C = .543

class are " Guanche." Many of the dolicho-mesene skulls which have been assigned to the " Nordic " type are on the very edge of the leptene group as regards the upper facial index. On the basis of a comparison of percentages of types in the index-combination group with those of the types in the entire series, there are significant associations of the " Guanche " type with dolicho-euryene and meso-euryene crania (88.89 per cent as compared with 55.72 per cent of " Guanche " types in the former group and 85.71 per cent as compared with 55.72 per cent in the latter). Similarly there is a strong association of the "Nordic" type with the dolicho-leptene class (72.73 per cent as compared with 29.90 per cent) and some association of this type with the meso-leptene class (45 per cent as compared with 29.9 per cent).

In these tables there may be discerned a tendency on my part to assign to the "Guanche" classification crania in which the face is relatively short and broad, while the skull-length is long in proportion to the breadth. On the other hand, long, narrow crania with long and narrow faces, or any sort of crania with narrow faces, have been assigned more frequently to the "Nordic" type.

TABLE 138. TENERIFE MALES. ASSOCIATION OF OBSERVED TYPE WITH COMBINATION OF NASAL AND MEAN ORBITAL INDEX

Nasal and Mean Orbital Index	Observed Type "Guanche"	"Nordic"	"Mediterranean"	Total
Chamaerrhine Chamaeconch				
Number	32	3	3	38
Per cent of class	84.21	7.89	7.89	
Chamaerrhine Mesoconch				
Number	7	0	1	8
Per cent of class	87.50	0	12.50	
Chamaerrhine Hypsiconch				
Number	1	1	0	2
Per cent of class	50.00	50.00	0	
Mesorrhine Chamaeconch				
Number	28	10	2	40
Per cent of class	70.00	25.00	5.00	
Mesorrhine Mesoconch				
Number	16	7	1	24
Per cent of class	66.67	29.17	4.17	
Mesorrhine Hypsiconch				
Number	3	0	3	6
Per cent of class	50.00	0	50.00	
Leptorrhine Chamaeconch				
Number	29	23	1	53
Per cent of class	54.72	43.40	1.89	
Leptorrhine Mesoconch				
Number	19	19	4	42
Per cent of class	45.24	45.24	9.52	
Leptorrhine Hypsiconch				
Number	2	8	3	13
Per cent of class	15.38	61.54	23.08	
Total				
Number	137	71	18	226
Per cent	60.61	31.41	8.96	

C = .431

It is of some interest to notice that of 17 brachycephalic crania only one was classified as of "Alpine" type. Most of them were assigned to the "Guanche" class. Almost all of these have length-breadth indices only a little above 80 and are not, therefore, pronounced brachycephals. These I regarded as mere variants of the large mesocephalic group which constitutes the greater part of the entire series.

Of 13 crania classified as "Mediterranean" in type, 2 are dolicho-mesene, 5 are meso-mesene, and 6 meso-leptene.

The mean square contingency coefficient of length-breadth and upper facial indices with morphological type is .543, indicating a fairly close relationship.

From the preceding table it is evident that the skull-type classifications bear some relation to the combinations of nasal and orbital index in Tenerife males. The broad-nosed crania with low and narrow orbits have usually been assigned to the "Guanche" type (84.21 per cent of this class as compared with 60.61 per cent of the "Guanche" type in the entire series). A similar association exists, in the case of the "Nordic" type, with narrow noses and high orbits (61.54 per cent of "Nordics" in the leptorrhine-hypsiconch series as compared with 31.41 per cent in the whole series). The mean square contingency coefficient is .431.

TABLE 139. TENERIFE MALES. OBSERVED TYPE, NASAL INDEX, ORBITAL INDEX

	"Guanche"		"Nordic"		"Mediterranean"		Total	
	No.	%	No.	%	No.	%	No.	%
Nasal Index								
Chamaerrhine	40	83.33	4	8.33	4	8.33	48	21.23
Mesorrhine	47	67.14	17	24.29	6	8.57	70	30.97
Leptorrhine	50	46.29	50	46.29	8	7.40	108	47.78
Orbital Index								
Chamaeconch	89	67.94	36	27.48	6	4.56	131	57.96
Mesoconch	42	56.76	26	35.14	6	8.11	74	32.74
Hypsiconch	6	28.57	9	42.86	6	28.57	21	9.29
Total	137	60.61	71	31.41	18	8.96	226	

Table 139 shows the association of observed crania type with divisions of the nasal and mean orbital indices separately. The "Guanche" type is associated positively with chamaerrhine or low, broad noses, and somewhat less intensively with low orbits and mesorrhine indices. The "Nordic" type is associated positively with leptorrhine and hypsiconch indices. The "Mediterranean" is associated positively with hypsiconch indices.

Table 140 is an attempt to learn whether or not there is any association between the observed type of crania and the size of the skull as measured by the cranial module. The conclusion drawn from this table is that "Mediterranean" type of crania are disproportionately selected from the crania of the series which are small; that the crania classified as "Guanche" include a disproportionate number of the largest crania of the series; and that the "Nordic" crania are more likely to be of medium size than to be either large or small.

TABLE 140. Tenerife Males. Association of Size of Cranial Module with Observed Type of Skull

Type	Small 142–149	Medium 150–154	Large 155–165	Total
"Guanche"				
Number	20	40	48	108
Per cent of class	18.51	37.04	44.44	
"Nordic"				
Number	8	31	19	58
Per cent of class	13.79	53.45	32.76	
"Mediterranean"				
Number	6	5	0	11
Per cent of class	54.55	45.45	0	
Total				
Number	34	76	67	177
Per cent	19.21	42.93	37.85	

C = .290

Table 141 is an attempt to show combinations of the subdivisions of cranial, upper facial, mean orbital, and nasal indices. It is based upon 199 male Tenerife crania. The possibilities of combinations are 81. Actually 52 of these possible combinations occur. The type of most frequent occurrence is mesocephalic-mesene-leptorrhine-chamaeconch. There are 22 crania in this compartment, or 11 per cent of the series. The next type in point of frequency is mesocephalic-mesene-mesorrhine-chamaeconch with 15 crania, then mesocephalic-mesene-leptorrhine-mesoconch with 14 crania, mesocephalic-leptene-leptorrhine-mesoconch with 13 crania, dolichocephalic-euryene-chamaerrhine-chamaeconch with 11 crania, and dolichocephalic-mesene-leptorrhine-chamaeconch with 10 crania. These six type combinations including 85 crania comprise 42.7 per cent of the entire series.

There are some significant positive associations in this table. Euryene upper facial indices are strongly associated with chamaerrhine nasal indices and with chamaeconch orbits. Leptorrhine noses and chamaeconch orbits are markedly associated with dolicholeptene crania. Leptorrhine noses and mesoconch orbits occur in conjunction with mesocephalic leptene crania. There is little doubt that this association table is too finely divided for the size of the series under discussion. Association and contingency are increased by the impossibility of a normal distribution of combinations owing to paucity of numbers. Nevertheless the mean square contingency coefficient of .586 indicates that the combinations are not largely a matter of chance. It is interesting to note that the theoretical Cro-Magnon index combination — dolichocephalic-euryene, leptorrhine-chamaeconch — does not occur. However, the most marked association in the series is the dolichocephalic-euryene-chamaerrhine-chamaeconch combination, which occurs in six crania. If one were to hazard a guess as to the racial affinities of such an index combination he would probably hesitate between Australoid and Negroid. The crania of this type have usually been as-

TABLE 141. TENERIFE MALES. ASSOCIATION OF COMBINATION OF NASAL AND MEAN ORBITAL INDEX WITH COMBINATION OF UPPER FACIAL AND CRANIAL INDEX

Upper Facial and Cranial Index	Nasal and Mean Orbital Index: Chamae-Chamae	Chamae-Meso	Chamae-Hypsi	Meso-Chamae	Meso-Meso	Meso-Hypsi	Lepto-Chamae	Lepto-Meso	Lepto-Hypsi	Total
Euryene-Dolicho										
Number	6	1	0	2	0	1	0	1	0	11
Per cent	54.55	9.09	0	18.18	0	9.09	0	9.09		
Euryene-Meso										
Number	11	0	0	3	3	0	5	1	0	23
Per cent	47.83	0	0	13.04	13.04	0	21.74	4.35		
Euryene-Brachy										
Number	2	1	0	0	2	0	0	0	1	6
Per cent	33.33	16.67	0	0	33.33	0	0	0	16.67	
Mesene-Dolicho										
Number	4	1	0	3	7	0	10	1	3	29
Per cent	13.79	3.45	0	10.34	24.14	0	34.48	3.45	10.34	
Mesene-Meso										
Number	8	2	0	15	9	0	22	14	1	71
Per cent	11.27	2.82	0	21.13	12.68	0	30.99	19.72	1.41	
Mesene-Brachy										
Number	1	0	1	1	2	0	1	2	0	8
Per cent	12.50	0	12.50	12.50	25.00	0	12.50	25.00	0	
Leptene-Dolicho										
Number	1	0	0	0	3	0	5	1	1	11
Per cent	9.09	0	0	0	27.27	0	45.45	9.09	9.09	
Leptene-Meso										
Number	2	0	0	3	4	4	9	13	4	39
Per cent	5.13	0	0	7.69	10.26	10.26	23.08	33.33	10.26	
Leptene-Brachy										
Number	0	0	0	1	0	0	0	0	0	1
Total										
Number	35	5	1	28	30	5	52	33	10	199
Per cent	17.58	2.51	0.50	14.07	15.07	2.51	26.13	16.58	5.02	

C = .586

signed to the " Guanche " type on morphological grounds, and there is reason for believing that they are due to a combination of the short, broad face of an original brachycephalic type with the cranial characters of a dolichocephalic type. One such cranium is classified as " Mediterranean," and one as " Guanche-Mediterranean."

The second association in point of distinctness is that obtaining between mesocephalic, leptene crania, and leptorrhine nasal index and mesoconch orbital index. Of 13 crania in this compartment 9 have been classified as " Nordic," 2 as " Guanche " and 2 as " Mediterranean." The mesocephalic, mesene crania, 71 in number, include 44 " Guanches," 19

" Nordics," 5 " Mediterraneans," and 3 " Nordic-Guanche." Most of the " Nordic " crania which are mesocephalic and mesene are leptorrhine (15 of 19). The remaining four are mesorrhine. Hypsiconch orbits occur in but one cranium of the mesocephalic, mesene combination. This skull has been classified as " Nordic."

There are eleven mesocephalic-euryene-chamaerrhine-chamaeconch crania, of which 8 have been called " Guanche," and 3 have been classified as " Alpine." The series includes 6 brachycephalic, euryene crania, of which 2 are " Alpines," and the remainder " Guanches." One of the " Alpines " in this class is mesorrhine-mesoconch and the other chamaerrhine-mesoconch. The morphological classifications of crania are not perfectly correlated with index combinations, and in every combination of facial index with length-breadth index there are more " Guanches " than " Nordics " or " Mediterraneans." It is probable that, if a prolonged study of this cranial series had been possible, many of the morphological classifications would have been altered. It should be remembered that I had the opportunity of seeing and handling each skull but once, and that the judgment as to morphological type was recorded as soon as my observations and measurements were terminated. Such judgment was entirely independent of consideration of index combinations.

TABLE 142. Tenerife Males. Means of Indices of "Nordics" Classified by Type and of "Nordics" Selected by Facial Index Combinations

Index	(a) Type "Nordics" No.	Mean	St. D.	(b) Indicial "Nordics" No.	Mean	St. D.	Excess of (b)	Thrice p. e. (b)
Length-breadth	73	76.23±0.18	2.33±0.18	67	76.16±0.13	1.75±0.10	−0.10	0.39
Upper Facial	65	54.49±0.20	2.35±0.14	67	55.66±0.15	1.87±0.11	*1.17*	0.45
Nasal	73	45.63±0.28	3.50±0.17	66	44.52±0.24	2.85±0.17	*−1.12*	0.72
Mean Orbital	74	83.31±0.33	4.25±0.23	66	83.88±0.34	4.13±0.24	0.57	1.02
Mean Morphological Rating	73	1.66±0.34	4.27±0.24	67	1.21±0.36	4.38±0.25	−0.45	1.08

In Table 142 the means of the subgroup of crania which has been classified as " Nordic " or " nearly Nordic," on the basis of morphological type, are compared with another group of Tenerife male crania selected as those presenting in combinations of length-breadth, upper facial, and mean orbital indices the closest approximations to what I believe to be the Nordic indicial type. It is of some interest to note how close the means of the indicial " Nordics " are to those of the " type Nordics " classified on the morphological basis. I am of the opinion that my type classifications are more accurate than the indicial classifications, because the former include the appraisal of morphological features and the consideration of size, and yet do not depart markedly from the index criteria, which, in the indicial classification, are the sole basis of selection.

Table 143 shows the extent to which the " Nordic " and " Mediterranean " subgroups differ in the means of their eight cranial indices from the means of the total series. It also shows the differences in the standard deviations of these indices for the entire series and the subgroups respectively. For each subgroup the excess of the mean for each index over

TABLE 143. Tenerife Males. Differentiation of Type Subgroups from Total Tenerife Male Series

	Total Series		"Nordics"			
	Mean	St. D.	Mean	St. D.	Excess	3 × p.e.
Length-breadth	75.99±0.10	2.30±0.07	76.23±0.18	2.33±0.13	0.24	0.54
Length-height	70.47±0.10	2.40±0.07	70.32±0.20	2.56±0.14	−0.15	0.60
Breadth-height	93.52±0.18	4.15±0.13	92.33±0.31	3.83±0.22	*−1.19*	0.93
Upper facial	52.14±0.14	3.08±0.10	54.49±0.20	2.35±0.14	*2.35*	0.60
Nasal	47.46±0.19	4.48±0.14	45.63±0.28	3.50±0.17	*−1.83*	0.84
Mean orbital	81.42±0.21	4.97±0.15	83.31±0.33	4.25±0.23	*1.89*	1.02
Maxillo-alveolar	119.96±0.31	6.65±0.22	120.00±0.61	7.23±0.43	0.04	1.83
Gnathic	93.25±0.15	3.42±0.11	93.46±0.28	3.44±0.20	0.21	0.84

	"Guanches"				"Mediterraneans"			
	Mean	St. D.	Excess	3 × p.e.	Mean	St. D.	Excess	3 × p.e.
Length-breadth	....	....	...	...	76.06±0.25	1.57±0.18	0.07	0.75
Length-height	....	....	...	...	71.67±0.44	2.59±0.31	0.80	1.32
Breadth-height	....	....	...	...	94.33±0.55	3.26±0.39	0.81	1.65
Upper facial	50.83±0.14	2.42±0.10	*−1.31*	0.42	54.85±0.42	2.24±0.29	*2.70*	1.27
Nasal	48.29±0.24	4.60±0.17	*0.83*	0.72	47.61±0.72	4.51±0.50	0.15	2.16
Mean orbital	80.10±0.26	4.79±0.18	*−1.32*	0.79	85.61±0.71	4.49±0.49	*4.19*	2.13
Maxillo-alveolar	....	....	...	...	117.57±1.06	5.93±0.77	2.39	3.18
Gnathic	....	....	...	...	93.53±0.71	4.17±0.50	0.28	2.13

the mean of that index for the entire series is set against three times the probable error of the mean of the subgroup.[1]

When the differences between the means of groups and of subgroups exceed three times the probable error, it is almost certain that the differences are significant and are not due to fluctuations incident to the sampling process. In four cases out of the eight indices the " Nordic " subgroup does differ from the total series by more than three times the probable error. These indices are breadth-height, upper facial, mean orbital, and nasal indices. In the case of the breadth-height index the mean of the " Nordic " subgroup is 1.19 less than that of the whole series, while three times the probable error of the subgroup is .93. The upper facial index is 2.35 higher on the average in the " Nordic " subgroup, whereas three times the probable error is .60. The nasal index of the subgroup is 1.83 less than that of the entire series, while thrice the probable error is .84. The orbital index is 2.05 more in the " Nordics," while the probable error taken three times is only 1.02. This seems to indicate that the skulls which have been assigned to the " Nordic " type are, on the average, distinguished by a somewhat lower breadth-height index, faces narrower with respect to their lengths, longer and narrower noses, and relatively higher orbits, than the average of the series.

The " Mediterranean " subgroup differs in the means of two of its indices from the entire group by an amount in excess of three times the probable error of the subgroup.

[1] In using the probable error of the mean of the subgroups instead of the probable errors of the differences between means of the groups and subgroups, I have made some sacrifice in accuracy in order to save labor. In this I have followed Goring, The English Convict, p. 53, footnote.

These are in the upper facial index, where the excess for the subgroup is 2.70, and thrice the probable error is only 1.27, and in the mean orbital index where the excess of the " Mediterraneans " is 4.18, and three times the probable error is 2.13. In the nasal index there is no significant difference from that of the whole series.

In order to measure the relationship between the subgroups and the entire series, with respect to the means of indices where strong deviations in the subgroups have been found,

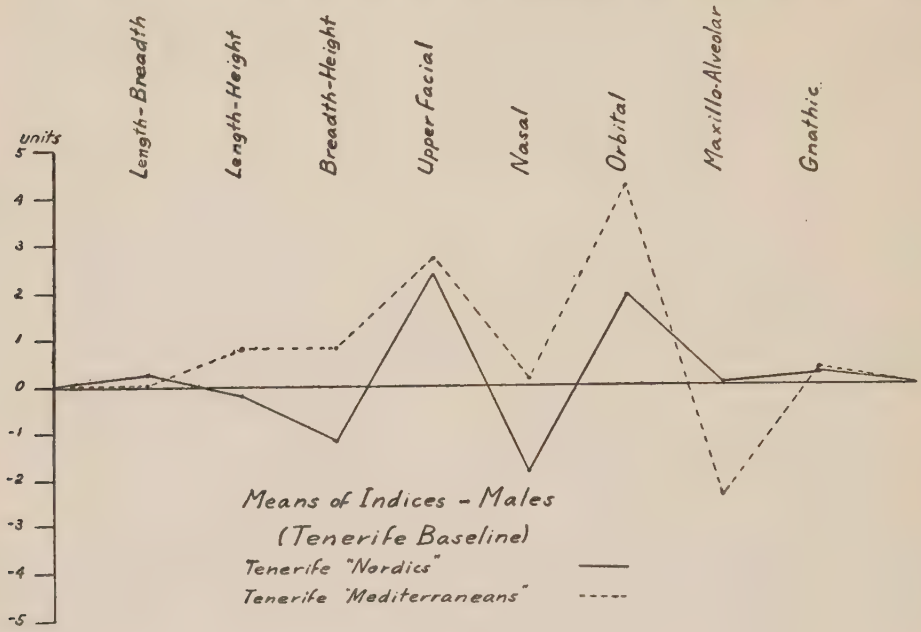


FIG. 22

I have made use of the correlation ratio.[1] If the entire series of Tenerife male crania be grouped as " Nordics," " Mediterraneans," and " Guanches," the correlation ratio of means of the upper facial index on classification as to type is .573. The correlation ratio of mean orbital index on type is .371. The correlation ratio of mean nasal index on type of skull is .084. The correlation ratios of upper facial and mean orbital index on morphological type classification are high, and indicate a strong differentiation of the subgroups of the series with respect to these indices. The lack of a high correlation ratio in the case of the mean nasal index is due to the fact that the " Mediterranean " and " Guanche " subgroups are not markedly differentiated from the generality of the series with respect to this index.

On the whole it may be stated that there is a definite indicial validity in our morphological type classifications, at any rate as regards the three most important indices of the facial skeleton.

[1] If N is the total number of skulls in the series and n_1, n_2, n_3 are the numbers of skulls in the subgroups; and if k equals the mean of the index of the whole group and k_1, k_2, k_3, the means of the indices of the subgroups; and if σ is the standard deviation of the whole group, the formula for the correlation ratio is as follows:

$$\eta = \sqrt{[\{n_1(k_1-k)^2 + n_2(k_2-k)^2 + n_3(k_3-k)^2 \ldots .\}/N]}/\sigma.$$

TABLE 144. Tenerife Males. Index Divisions by Morphological Types

Index	Total Series No.	Total Series %	"Nordic" Group No.	"Nordic" Group %	"Mediterranean" Group No.	"Mediterranean" Group %	"Guanche" Group No.	"Guanche" Group %
Length-breadth								
Dolicho (x–74.9)	63	25.74	22	30.14	3	16.67	38	24.68
Meso (75–79.9)	165	67.3	45	61.64	15	83.33	105	68.18
Brachy (80–x)	17	6.9	6	8.22	0	0	11	7.14
Length-height								
Chamae (x–69.9)	180	33.5	22	30.99	3	20.00	55	25.94
Ortho (70–74.9)	147	61.5	44	61.97	9	60.00	94	61.44
Hypsi (75–x)	12	5.0	5	7.04	3	20.00	4	2.61
Breadth-height								
Tapeino (x–91.9)	92	38.5	26	37.14	3	20.00	63	40.91
Metrio (92–97.9)	127	53.1	35	50.00	9	60.00	83	53.90
Akro (98–x)	20	8.3	9	12.86	3	20.00	8	5.20
Upper facial								
Euryene (x–49.9)	37	17.3	1	1.54	0	0	36	26.47
Mesene (50–54.9)	128	59.8	34	52.31	7	53.85	87	63.97
Leptene (55–x)	49	22.9	30	46.15	6	46.15	13	9.57
Nasal								
Lepto (x–46.9)	105	42.0	48	65.75	6	33.33	51	32.07
Meso (47–50.9)	90	36.0	19	26.03	7	38.89	64	40.25
Chamae (51–x)	55	22.0	6	8.22	5	27.78	44	27.67
Mean orbital								
Chamae (x–82.9)	148	58.7	34	45.95	5	27.78	109	68.13
Meso (83–88.9)	86	34.1	31	41.89	8	44.44	47	29.37
Hypsi (89–x)	18	7.1	9	12.16	5	27.78	4	2.50
External palatal								
Dolicho (x–109.9)	10	4.8	5	7.94	1	7.14	4	3.10
Meso (110–114.9)	26	12.6	5	7.94	3	21.43	18	13.95
Brachy (115–x)	170	82.5	53	84.13	10	71.43	107	82.94
Gnathic								
Orthog. (x–97.9)	209	89.7	60	86.96	12	80.00	137	91.95
Mesog. (98–102.9)	22	9.4	9	13.04	3	20.00	10	6.71
Prog. (103–x)	2	0.8	0	0	0	0	2	1.34

Differentiation of type subgroups from total Tenerife female series.

TABLE 145. Tenerife Females. Means of Indices by Morphological Groups

Index	Total Series Mean	Total Series St. D.	"Nordics" Mean	"Nordics" St. D.	"Nordics" Excess	"Nordics" 3 × p.e.
Upper facial	51.81±0.28	3.29±0.20	54.70±0.37	3.38±0.51	*2.81*	1.11
Nasal	49.58±0.28	3.79±0.20	48.00±0.85	4.27±0.61	−1.58	2.55
Mean orbital	82.78±0.37	4.92±0.26	84.00±0.64	3.22±0.46	1.22	1.92

	"Guanches" Mean	"Guanches" St. D.	"Guanches" Excess	"Guanches" 3 × p.e.	"Mediterraneans" Mean	"Mediterraneans" St. D.	"Mediterraneans" Excess	"Mediterraneans" 3 × p.e.
Upper facial	50.44±0.46	3.38±0.26	−1.37	1.38	53.08±0.39	2.98±0.26	*1.27*	1.17
Nasal	51.07±0.40	3.24±0.29	*1.49*	1.20	49.69±0.42	3.69±0.30	−0.11	1.26
Mean orbital	81.33±0.51	4.12±0.36	−0.55	1.50	83.57±0.54	4.93±0.40	0.79	1.62

Table 145 shows the means of morphological type groups of Tenerife females set against the means of the entire female series, with the excesses of each group and three times the probable error of the group. It is to be noted that the small " Nordic " group, consisting of but eleven crania, differs from the means of the entire group by an amount in excess of

three times the probable error of the former in the case of the upper facial index. The facial indices of the " Nordics " are higher, as are also their mean orbital indices. In the case of the nasal index there is a probably significant difference, amounting to nearly twice the probable error, and showing the tendency of the " Nordic " subgroup to have more leptorrhine indices.

In the case of the " Guanche " group, the upper facial index shows a deficiency of a little less than three times the probable error of the group, as compared with the mean of the whole series. This indicates the extent to which the " Guanche " type skulls tend to have shorter and broader faces than the series in general. A similar excess is shown in the mean nasal index of the " Guanche " group, which tends to be significantly higher than that of the series in general.

The " Mediterranean " subgroup shows a significant excess only in the case of the upper facial index, which is higher in this subgroup.

Differences of means of indices by morphological type. In general it may be observed that the significant differences between the means of indices of the face in the various type subgroups are about the same for both sexes. In the upper facial index the " Nordics " of both the male and female series show higher indices than their respective total Tenerife series, and in each case the difference exceeds three times the probable error of the mean of the subgroup. In the case of the nasal index, the male series of " Nordics " shows a deficiency of more than three times the probable error of the subgroup, whereas the female " Nordic " subgroup shows a deficiency from the mean of its series of a little less than twice the probable error, which is possibly not significant. In the case of the orbital index, the male " Nordics " show a certainly significant excess, but the female group shows an excess in the same direction of only about twice its own probable error. Altogether male and female " Nordics " agree in having proportionately longer and narrower faces, longer and narrower noses, and higher and narrower orbital openings. The differences are more pronounced in the males.

The " Guanche " subgroup of males shows a certainly significant deficiency in the mean of the upper facial index when compared with that of the whole male series, and this is true also of the " Guanche " females, although the deficiency in their case is barely three times their own probable error. Again both " Guanche " males and " Guanche " females show significant excess in the means of their nasal indices, as compared with those of their respective series. But the " Guanche " males show a deficiency in mean orbital index which is far in excess of three times the probable error of the mean of the subgroup, whereas the deficiency in the case of the females is only a little more than the probable error and is probably not significant. Again, there is agreement in the direction of deviation from the total series of the males and females within the " Guanche " subgroups, and again the differences are more marked in case of the males.

The " Mediterranean " subgroup, in the case of the males, shows significant differences from the total male series in upper facial and mean orbital index. The female group of "Mediterraneans" agrees with the male group in showing a significantly higher mean facial index, and in a complete lack of differentiation from the mean of the series in regard to the nasal index. The female group, however, shows an excess in the mean orbital index which is a little less than one and a half times its own probable error and may not be significant. However, the difference is in the same direction as that displayed by the males.

It may be concluded that the female type subgroups display differences, from the means of their total series, substantially similar to those of the males, although they are not so pronounced and in some cases may not be significant. The table following shows the means of facial indices of males of various types set against those of the females which have been assigned to the same type.

Differentiation between type subgroups of males and females.

From Table 146 it may be inferred that there is probably no significant difference between the means of the upper facial indices of males and females in Tenerife, as the difference between their means is only slightly in excess of the probable error of such difference. Similarly no significant difference between the means of this index manifests itself in the " Guanche " and " Nordic " subgroups. But in the " Mediterranean " subgroup there is an excess of 1.77 in the upper facial index of the males as compared with the mean of the females, and this difference is more than three times the probable error and is almost certainly significant. The difference is, however, in the general direction that would be expected, i.e., the females have relatively shorter and broader faces.

In the case of the nasal index, the entire series and each of the subgroups show marked and probably significant excess in the means when males and females are compared. In every case the males have lower nasal indices (relatively longer and narrower noses) than the females. In the " Nordic " and " Mediterranean " subgroups these differences are a little less than three times the probable error, and in the " Guanche " subgroup and in the entire series the differences are greatly in excess of three times the probable error; in fact these groups show excess of approximately six times the probable error.

In the mean orbital index the " Nordic " males differ from the " Nordic " females by a deficiency of a little less than the probable error. The " Guanche " subgroup differs on the side of a male deficiency equal to about twice the probable error and possibly significant. The "Mediterranean" subgroup shows a deficiency, on the other side, of somewhat less than three times the probable error, the females showing a lower mean orbital index. The total series shows the prevalent tendency of the males to have proportionately lower and wider orbits, the difference in the means amounting to considerably more than three times the probable error of that difference.

In general the subgroups show differences between the sexes in these three indices, which

TABLE 146. Differences of Means of Facial Indices of Tenerife Males and Females by Types

Index	Mean	St. D.	Excess	p.e.[1]	3 × p.e.	No.
Upper Facial						
Total series						
Males	52.14±0.14	3.08±0.10	0.33	±0.31	0.93	214
Females	51.81±0.28	3.29±0.20	−0.33	±0.31	0.93	64
"Nordics"						
Males	54.49±0.20	2.35±0.14	−0.21	±0.42	1.26	65
Females	54.70±0.37	3.38±0.26	0.21	±0.42	1.26	10
"Guanches"						
Males	50.83±0.14	2.42±0.10	0.39	±0.48	1.44	136
Females	50.44±0.46	3.38±0.32	−0.39	±0.48	1.44	25
"Mediterraneans"						
Males	54.85±0.42	2.24±0.29	*1.77*	±0.57	1.71	13
Females	53.08±0.39	2.98±0.26	*−1.77*	±0.57	1.71	26
Nasal						
Total series						
Males	47.46±0.19	4.48±0.14	*−2.12*	±0.34	1.02	250
Females	49.59±0.28	3.79±0.20	*2.12*	±0.34	1.02	80
"Nordics"						
Males	45.63±0.28	3.50±0.17	−2.37	±0.89	2.67	73
Females	48.00±0.85	4.27±0.60	2.37	±0.89	2.67	11
"Guanches"						
Males	48.29±0.24	4.60±0.17	*−2.78*	±0.47	1.41	159
Females	51.07±0.40	3.24±0.29	*2.78*	±0.47	1.41	29
"Mediterraneans"						
Males	47.61±0.72	4.51±0.50	−2.08	±0.83	2.49	18
Females	49.69±0.42	3.69±0.30	2.08	±0.83	2.49	35
Mean Orbital						
Total Series						
Males	81.42±0.21	4.97±0.15	*−1.36*	±0.42	1.26	252
Females	82.78±0.37	4.92±0.26	*1.36*	±0.42	1.26	81
"Nordics"						
Males	83.31±0.33	4.25±0.23	−0.69	±0.72	2.16	74
Females	84.00±0.64	3.22±0.45	0.69	±0.72	2.16	11
"Guanches"						
Males	80.10±0.26	4.79±0.18	−1.23	±0.57	1.71	160
Females	81.33±0.51	4.12±0.36	1.23	±0.57	1.71	30
"Mediterraneans"						
Males	85.61±0.71	4.49±0.49	2.14	±0.89	2.67	18
Females	83.57±0.54	4.93±0.39	−2.14	±0.89	2.67	35

[1] The probable error of the difference between the means of two samples drawn from independent universes is equal to the square root of the sum of the squares of the probable errors of the means of the respective samples.

are of the same kind as the differences displayed between the sexes of the total Tenerife series. The only important exception to this is the possibly significant deviation of the " Mediterranean " females from the males of that subgroup. Here the females have, contrary to the usual rule, orbits which are proportionately lower and broader than those of the males.

It can also be deduced from this table that, in general, the sex differences between the subgroups determined by morphological type are somewhat less than the sex differences of the series as a whole. This should be the case if our type judgments have any indicial

validity. There is one exception to this statement. In the " Mediterranean " subgroup the females show a deficiency of the upper facial index mean which is more than three times the probable error, while in all other groups and subgroups the excess or deficiency between the sexes is less than the probable error. This fact leads me to be somewhat suspicious of the validity of some of my attributions to the " Mediterranean " type and the more so because of the unusual deviation of the " Mediterranean " females with respect to the mean orbital index.

Differences between " Nordic " and " Mediterranean " type subgroups

TABLE 147. Males. Comparisons between Means of Indices of Tenerife "Nordics" and Tenerife "Mediterraneans"

Index	Mean	St. D.	Excess	p.e.	3 × p.e.
Length-breadth					
"Nordics"	76.23±0.18	2.33±0.13	0.17	±0.31	0.93
"Mediterraneans"	76.06±0.25	1.57±0.18	−0.17	±0.31	0.93
Length-height					
"Nordics"	70.32±0.20	2.56±0.14	−1.35	±0.48	1.44
"Mediterraneans"	71.67±0.44	2.59±0.31	1.35	±0.48	1.44
Breadth-height					
"Nordics"	92.33±0.31	3.83±0.22	*−2.00*	*±0.63*	*1.89*
"Mediterraneans"	94.33±0.55	3.26±0.39	*2.00*	*±0.63*	*1.89*
Upper facial					
"Nordics"	54.49±0.20	2.35±0.14	−0.36	±0.46	1.38
"Mediterraneans"	54.85±0.42	2.24±0.29	0.36	±0.46	1.38
Nasal					
"Nordics"	45.63±0.28	3.50±0.17	−1.98	±0.77	2.31
"Mediterraneans"	47.61±0.72	4.51±0.50	1.98	±0.77	2.31
Mean orbital					
"Nordics"	83.31±0.33	4.25±0.23	−2.31	±0.78	2.34
"Mediterraneans"	85.61±0.71	4.49±0.49	2.31	±0.78	2.34
Maxillo-alveolar					
"Nordics"	120.00±0.61	7.23±0.43	2.43	±1.22	3.66
"Mediterraneans"	117.57±1.06	5.93±0.77	−2.43	±1.22	3.66
Gnathic					
"Nordics"	93.46±0.28	3.44±0.20	−0.09	±0.76	2.28
"Mediterraneans"	93.53±0.71	4.17±0.50	0.09	±0.76	2.28

Table 147 shows the differences in means of eight indices between the Tenerife " Nordics " and the Tenerife " Mediterraneans." In five of the eight indices the differences are probably significant. The " Nordic " crania show lower means of the length-height and breadth-height indices, also the nasal and mean orbital indices. The " Mediterraneans " show a lower mean value of the maxillo-alveolar index. Both of these subgroups differ from the " Guanche " subgroup more markedly than they do from each other. They confirm the morphological distinction, however, in the indicial differences that they exhibit.

RACIAL AFFINITIES OF THE "NORDIC" TYPE

TABLE 148. MALES. COMPARATIVE TABLE OF MEASUREMENTS AND INDICES OF TENERIFE "NORDICS" AND OTHER CRANIAL GROUPS

	Tenerife "Nordics" (73)	Franks Hainaut (44) (Houzé)	Graverow Dolicho. Bavaria (31)[2] (Kollman)	Graverow N. W. Germany (46) (Gildemeister)	Basques Guipuzcoa (23) (Aranzadi)	Gran Canaria "Semites" (Verneau)	Tenerife Large Dolicho. (32)
Glabello-occipital length	185.4	188.3	188.7	190.2	187.5	187.0	191.3
Breadth, maximum.....	141.2	142.4	135.4	139.7	143.1	142.0	140.8
Height, basion-bregma.....	131.1	133.1	133.1	136.2	131.3	133.0	136.6
Cranial module[1].....	152.7	154.6	152.4	155.4	153.9	154.0	156.2
Minimum frontal diameter ..	95.8	95.6	97.8	97.2	96.5	....	96.0
Bizygomatic diameter	131.3	132.0	131.0[3]	132.9	129.8	130.0	134.0
Nasion-alveon height.....	71.4	86.2	70.5	70.6	69.7	(73)[4]	71.4
Length-breadth index.....	76.2	75.3	72.9[3]	73.6	76.2	76.1	73.6
Length-height index.....	70.3	70.6	70.6	71.6	69.7	71.1[1]	71.0
Breadth-height index.....	92.3	94.0	90.8	97.5[1]	91.7	93.6[1]	96.5
Upper facial index.....	54.5	65.0	53.8[1]	53.1	54.6	56.2[1]	54.0
Nasal index.....	45.6	43.9	43.6[3]	46.6	43.6	44.5	46.7
Orbital index.....	83.3	86.6	79.9[3]	85.0[1]	86.7	90.4	81.2

[1] Index calculated from the means.
[2] Includes both sexes.
[3] Mean of males only.
[4] Deduced from adding nasal height to inter-maxillary height.

In Table 148 the means of certain measurements and indices of the " Nordic " subgroup are compared with those of certain other groups, including the Frankish series from Ciply, Hainaut, measured by Houzé,[1] the dolichocephals of the Bavarian Graverows studied by Kollman,[2] the ancient Graverow dolichocephals from Northwestern Germany,[3] crania of the Spanish Basques measured by Aranzadi,[4] a series of ancient crania from Gran Canaria selected by Verneau as representative of a " Semitic " type, and finally a series of 32 dolichocephalic male Tenerife crania with modules of 153 or more, including all the skulls of such description in our Guanche series.

The reasons for the selection of the Belgian Franks and the Graverow Germans are obvious. I have utilized the Basque series because it consists of leptene mesocephals, in whom there is known to be a strong admixture of a blond element which is presumably Nordic. The " Semitic " series from Gran Canaria has been included because I think that it may be " Nordic." I have selected from the Tenerife male series all of the crania which are dolichocephalic and have cranial modules of 153 or more, for the following reasons: My original classifications as to type were largely based upon facial characters, and not at all upon measurements or indices. In my " Nordic " series there have been included, consequently, a large number of mesocephals, and even a few brachycephals (6). It has

[1] Houzé, op. cit., loc. cit.

[2] J. Kollman, Schädel aus alten Grabstätten Bayerns, Beitr. z. Anthrop. u. Urgesch., Bayerns, vol. I, 1877, pp. 151–221.

[3] Gildemeister, op. cit., loc. cit.

[4] T. de Aranzadi, Sur quelques corrélations du trou occipital des crânes Basques, Bull. et Mém. Soc. D'Anthrop., Paris, s. 6, vol. 5, 1914, pp. 364, 365. Means calculated from his data.

seemed worth while, therefore, to examine all of the dolichocephals at or above the mean of the male series with respect to size, in order to eradicate the influence of the admixture of the broad-headed strain as far as possible, and at the same time to eliminate the small dolichocephals with long faces which, perhaps, should be classified as " Mediterranean." The general consideration of size, based upon observation, undoubtedly entered into my morphological classification, as has been pointed out on page 227. Here it was shown that the coefficient of contingency of morphological type with value of the cranial module is .290, representing the extent to which " Mediterranean " crania tended to be of small size, " Guanche " crania of large size, and " Nordic " crania of medium size. It is therefore advisable to consider with the morphological " Nordic " subgroup, all of the large dolichocephals. It is hardly necessary to remark that there has been no selection of the large dolichocephals other than that mentioned. I have paid no attention to the presence or absence of disharmony. Of the 32 crania included in this subgroup 14 were classified as " Nordic " or " nearly Nordic," or as mixtures of " Nordic " with something else. Two were called " Mediterranean." The rest were " Guanches."

Turning to the analysis of Table 148 it should be noted first of all that the " Nordic " subgroup of Tenerife males shows a mean head-length of almost 3 mm. less than any of the presumably authentic " pure " Nordics. In the series of Graverow crania cited from Gildemeister and Kollman, brachycephals and mesocephals have been weeded out, in order to isolate the dolichocephalic Nordic type. Our large dolichocephalic Tenerife subgroup shows a mean head-length about one millimeter greater than the maximum Graverow mean here cited. In breadth all of the series vary as to means within a small range, except Kollman's Graverow series of dolichocephals from Bavaria. These are somewhat narrower, probably because females are mixed with the males. In height the Tenerife " Nordics " are lower than any of the other groups except the Basques, who, of course, are a mixed lot also. The large Tenerife dolichocephals show a considerably higher basion-bregma average, and one which is practically indentical with that of Gildemeister's Graverow crania. With the exception of the enormously long-faced Hainaut Franks, these various groups show close similarities in the facial measurements, although it should be noted that the bizygomatic diameter is somewhat greater in the large Tenerife dolichocephals than in any of the other groups, and that the Basques show rather smaller dimensions than any of the rest.

In the cranial index there are close correspondences, with the selected dolichocephals (Kollman, Gildemeister, and large Tenerife) naturally showing somewhat lower values. The length-height indices are in all cases quite similar. In the breadth-height indices both of our Tenerife subgroups fall within the range of the means of the putative Nordics. In the upper facial index the Franks of Hainaut occupy an isolated position, as they would if compared with any other groups of crania hitherto studied. The other groups all verge upon the leptene classification, with the two Graverow series showing the lowest average

of the index. All of our Canary subgroups here listed, including the " Semites " of Verneau, have relatively and absolutely longer faces than the Graverow crania. In the nasal index all groups show leptorrhine means, with " Nordics " at both extremes of the range.

TABLE 149. MALES. DIFFERENCES FROM THE MEANS OF MEASUREMENTS AND INDICES OF "NORDIC" TENERIFE MALES

	Franks Hainaut Belgium	Graverow Dolicho-cephals Bavaria	Graverow Dolichocephals N. W. Germany	Basques Guipuzcoa Spain	"Semites" Gran Canaria	Tenerife Large Dolichocephals
Glabello-occipital length	+ 2.9	+3.3	+4.8	+2.1	+1.6	+5.9
Breadth, maximum	+ 1.2	−5.8	−1.5	+0.9	−0.2	−0.4
Height, basion-bregma	+ 2.0	+2.0	+5.1	+0.2	+1.9	+5.5
Minimum frontal diameter	+ 0.2	+2.0	+1.4	+0.7	...	+0.2
Bizygomatic diameter	+ 0.9	−0.3	+1.6	−1.5	−1.3	+2.7
Nasion-alveon height	+14.8	−0.9	−0.8	−1.7	+1.6	0
Length-breadth index	− 0.9	−3.3	−2.6	0	−0.1	−2.6
Length-height index	+ 0.3	+0.3	+1.3	−0.6	+0.8	+0.7
Breadth-height index	+ 1.7	−1.5	+5.2	−0.6	+1.3	+4.2
Upper facial index	+10.5	−0.7	−1.4	+0.1	+0.7	−0.5
Nasal index	− 1.7	−2.0	+1.0	−2.0	−1.1	+1.1
Orbital index	+ 3.3	−3.4	+1.7	+3.4	+7.1	−2.1
MEAN DIFFERENCES FROM TENERIFE "NORDICS," REGARDLESS OF SIGNS						
Measurements	3.67	2.38	2.53	1.18	1.32	2.45
Indices	3.07	1.87	2.20	1.11	1.85	1.87

TABLE 150. MALES. DIFFERENCES FROM THE MEANS OF MEASUREMENTS AND INDICES OF LARGE DOLICHOCEPHALIC TENERIFE MALES

	Franks Hainaut	Graverow Bavarians	Graverow N. E. Germans	Basques Guipuzcoa	"Semites" Gran Canaria	Tenerife "Nordics"
Glabello-occipital length	− 3.0	−2.6	−1.1	−3.8	−4.3	−5.9
Breadth, maximum	+ 1.6	−5.4	−1.1	+2.3	+1.2	+0.4
Height, basion-bregma	− 3.5	−3.5	−0.4	−5.3	−3.6	−5.5
Minimum frontal diameter	− 0.4	−1.8	−1.2	−0.5	..	+0.2
Bizygomatic diameter	− 2.0	−3.0	−1.1	−4.2	−4.0	−2.7
Nasion-alveon height	+14.8	−0.9	−0.8	−1.7	+1.6	0
Length-breadth index	− 1.7	−0.7	0	+2.6	+2.5	+2.6
Length-height index	− 0.4	−0.4	+0.6	−1.3	+0.1	−0.7
Breadth-height index	− 2.5	−5.7	+1.0	−4.8	−2.9	−4.2
Upper facial index	+11.0	−0.2	−0.9	+0.6	+2.2	−0.5
Nasal index	− 2.8	−3.1	−0.1	−3.1	−2.2	−1.1
Orbital index	+ 5.4	−1.3	+3.8	+5.5	+9.2	+2.1
MEAN DIFFERENCES FROM LARGE TENERIFE DOLICHOCEPHALS, REGARDLESS OF SIGNS						
Measurements	4.21	2.87	0.95	2.97	2.94	2.45
Indices	3.97	1.90	1.07	2.98	3.18	1.87

Table 149 gives the mean differences between measurements and indices of the groups adduced for comparison, on the one hand, and the Tenerife " Nordics " on the other. The most widely diverging group is that of the Hainaut Franks, who stand apart because of their enormously long faces. The closest resemblance is found in the group of Spanish

Basques, which differs from the Tenerife " Nordics " in the means of six measurements to the average extent of 1.18 mm., disregarding signs, and in six indices to the average extent of 1.11 index units. The resemblance is so close that it establishes a very strong presumption that the mixing of similar or identical racial strains has occurred in both cases. The only possibly significant differences in the indices lie in the relatively lower orbits and broader noses of the Tenerife " Nordics." The Basques have absolutely and relatively

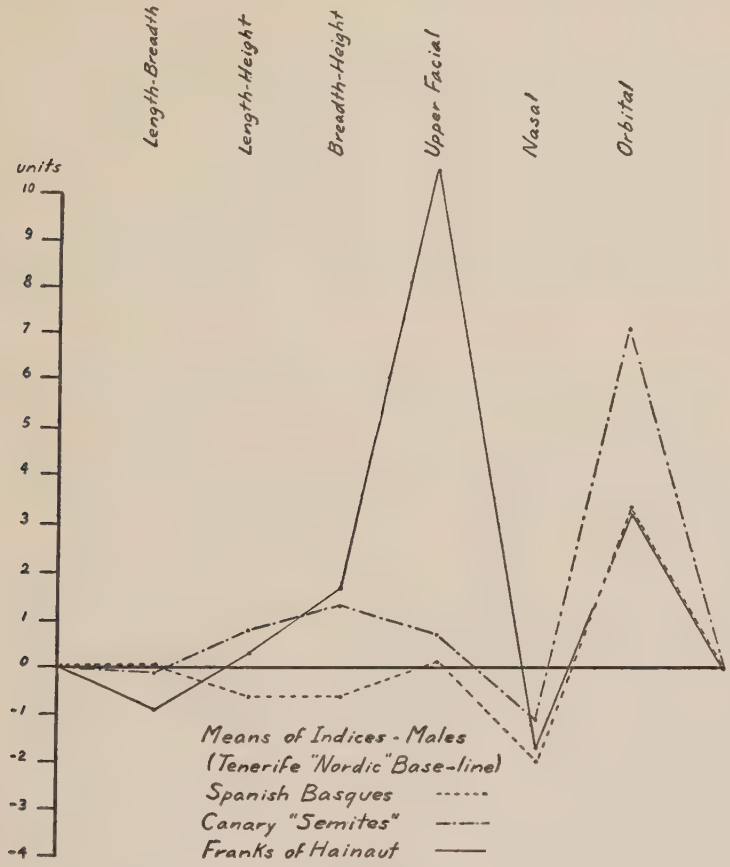


Fig. 23

smaller faces, and probably include a larger leptoprosopic Mediterranean race admixture than is found among the Tenerife " Nordics." That the Spanish Basques include a large admixture of Nordic blood has for a long time been recognized. De Hoyos Sáinz and de Aranzadi find the largest percentage of blue, gray-blue, light, and bluish eyes in the Basque provinces and Navarre, of all of the districts of Spain. This amounts to 39.2 per cent of 237 observations, whereas the total percentage of such eyes in all of Spain is 17.1 per cent of 1690 observations.[1]

[1] L. de Hoyos Sáinz, and T. de Aranzadi, Vorläufige Mittheilung zur Anthropologie von Spanien, Arch. f. Anthrop., Brnschwg., 1893–94, vol. 22, p. 432.

Actually my attention to the Spanish Basque series of de Aranzadi was not in the first instance due to the Nordic elements in their composition, but rather to the suggestion of my colleague, Dr. R. B. Dixon, that this series contains certain brachy-chamaecephalic elements similar to those found in the Canary Islands. After calculating the means from de Aranzadi's data I was immediately impressed by their similarity to the Tenerife " Nordic " subgroup, and this impression has been confirmed by further analysis.

As I have stated, my morphological assignment of crania to the " Nordic type " was largely based upon facial characters and I had no idea that I was isolating a pure racial type. A large number of skulls so classified were designated " near Nordic," " Nordic

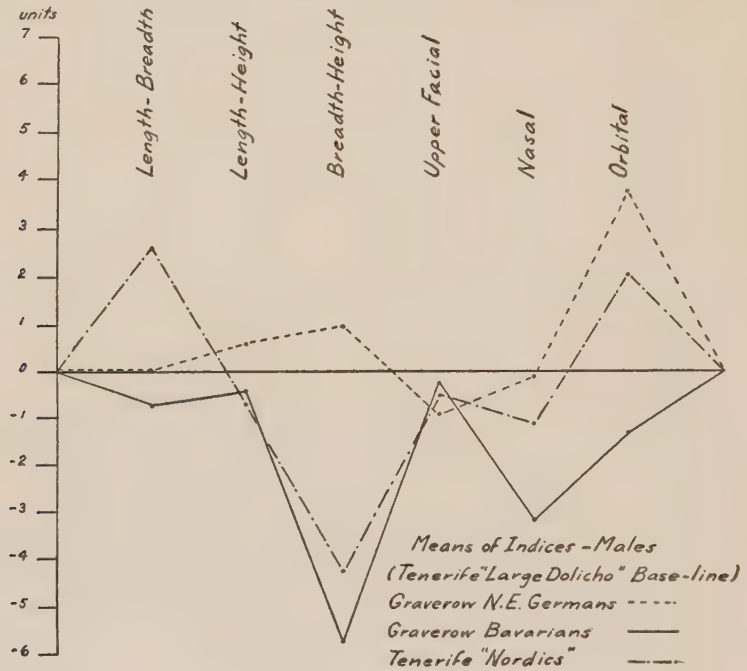


Fig. 24

mixture," etc. The selection of the large dolichocephalic Tenerife male subgroup is an effort to apply the criteria of size and length-breadth index to the problem of Tenerife racial affinities.

The means of measurements and indices of this subgroup are given in Table 148. Of the measurements the basion-bregma height should be noticed. The mean 136.6 mm. is much higher than that of the whole Tenerife group or of any of the other subgroups distinguished. Correspondingly the breadth-height index rises to a mean of 96.5. The mean bizygomatic breadth is somewhat larger than that of the other groups.

This group of large dolichocephals differs from the Tenerife " Nordic " series by an average of 2.45 mm. for six measurements and 1.87 units for six indices. It is almost exactly the same distance from the " Nordic " subgroup as is the series of Graverow doli-

chocephals. Table 150 records the mean differences and differences of the means of the same groups just dealt with, but in this case with reference to the large Tenerife dolichocephals. The practical coincidence of the means and measurements with Gildemeister's Bremen Graverow series is very remarkable. The only really significant difference between the two series lies in the orbital index, which always has a high probable error. The mean difference of six measurements is 0.95 mm. and of six indices 1.07 index units. In so far as this method of judging craniometric similarities is valid there is here a substantial identity of " average type."

It should be remarked here that this method of averaging differences tends to obscure resemblances and similarities unless each individual measurement and indicial difference is carefully inspected. For example, the excessive facial length and upper facial index of the Franks weighs down the mean difference between this and every other group so that we are likely to lose sight of many close resemblances. Similarly the very high average value of the orbital index in Verneau's " Semitic " series obscures its otherwise close resemblance to our Tenerife " Nordic " subgroup.

TABLE 151. MALES. MEAN DIFFERENCES OF MEASUREMENTS AND INDICES BETWEEN NORDIC AND MIXED NORDIC GROUPS

	Tenerife Large Dolicho	N. E. German Graverow (Gildemeister)	Tenerife "Nordics"	Bavarian Graverow (Kollman)	Basques Guipuzcoa (Aranzadi)	Gran Canaria "Semites" (Verneau)	Franks Hainaut (Houzé)	
Tenerife	0	0.95	2.45	2.87	2.97	2.94	4.21	Measurements
Dolicho	0	1.07	1.87	1.90	2.98	3.18	3.97	Indices
N. E. German	0.95	0	2.53	2.08	2.62	2.84	4.27	Measurements
Graverow	1.07	0	2.20	2.42	2.75	2.92	3.73	Indices
Tenerife	2.45	2.53	0	2.38	1.18	1.32	3.67	Measurements
"Nordics"	1.87	2.20	0	1.87	1.11	1.85	3.07	Indices
Bavarian	2.87	2.08	2.38	0	2.33	2.38	4.38	Measurements
Graverow	1.90	2.42	1.87	0	2.12	3.38	3.97	Indices
Basques	2.97	2.62	1.18	2.33	0	1.36	3.82	Measurements
Guipuzcoa	2.98	2.75	1.11	2.12	0	1.60	2.48	Indices
"Semites"	2.94	2.84	1.32	2.38	1.36	0	3.40	Measurements
Canaria	3.18	2.92	1.85	3.38	1.60	0	2.48	Indices
Franks	4.21	4.27	3.67	4.38	3.82	3.40	0	Measurements
Hainaut	3.97	3.73	3.07	3.97	2.48	2.48	0	Indices

Table 151 gives the mean inter-group differences for the six measurements and six indices studied. The large Tenerife dolichocephals show a closer resemblance to N. E. German Graverow crania than exists between any other two groups. The two series of Graverow crania resemble both our Tenerife dolichocephals and our Tenerife "Nordics" more closely than they resemble each other. Under these circumstances I feel assured in concluding that our " Nordic " subgroup is actually predominantly Nordic in racial type with some admixture of other elements, and that the group of large Tenerife dolichocephals represents a closer approximation still to a pure Nordic type. If one desired to select

Nordic types by utilizing size, and cranial and facial indices, he could easily pick out a fairly large group of individual crania from our Tenerife male series which would be the very quintessence of the racial type. However, I have not wished to go further than to establish the validity of my original morphological classification, which I think I have done.

RACIAL AFFINITIES OF THE "MEDITERRANEAN" TYPE

TABLE 152. MALES. COMPARATIVE TABLE OF MEANS OF INDICES OF "MEDITERRANEAN" GROUPS

	Tenerife "Med." (18)	Tenerife moderns (25) (Lajard)	Gran Canaria moderns (25) (Lajard)	Azores moderns (20) (Lajard)	Portuguese moderns (494) (Macedo)	Spanish (Hoyos Sáinz)	Egyptians ancient (Thomson) (MacIver)	Arabs Algeria (15) (Broca)
Length-breadth index	76.0	74.6	74.5	73.8	75.0	75.0	73.4	74.7
Length-height index	71.7	73.5	73.5	71.1	72.2	72.0	72.8	74.3
Breadth-height index	94.3	98.5	98.9	96.3	94.4	95.5	..	99.2
Upper facial index	54.8	51.9	50.4	52.3	..	55.5	55.6	..
Orbital index	85.6	86.5	86.5	89.2	82.6	88.0	..	85.6
Nasal index	47.6	49.5	50.0	46.4	44.4	46.0	49.7	45.9
Mean differences regardless of signs	0	2.18	2.60	2.02	1.56	1.20	1.65	2.10

In Table 152 I have compared the means of six indices of the small "Mediterranean" subgroup of the Tenerife males with means of indices of various other groups of crania of peoples generally considered to belong predominantly to the Mediterranean race. The modern Tenerife crania measured by Lajard came from an ossuary at Orotava, and those from Gran Canaria were derived from an ossuary at Telde. Presumably these crania belonged to inhabitants of the islands who were principally of Spanish origin, but with some of the aboriginal Canarian blood intermingled with the Iberian strains. The Egyptian means represent more than 700 measurements of crania of all periods from the Early Predynastic to the Roman period.

In the case of the length-breadth index it is to be noted that our ancient "Mediterranean" Guanches are mesocephalic with a mean index of 76, as are also the modern Portuguese (mean 75). All the other groups are dolichocephalic. The reader should remember that the "Mediterranean" subgroup, as well as the "Nordic" and "Guanche" subgroups, were constituted on the basis of morphological observations, and not from the selection of crania belonging to certain index-class combinations. A skull with a length-breadth index of 74 does not look appreciably different from one with an index of 76. While the length-breadth index of the "Mediterranean" subtype is that of the whole Guanche group, it is interesting to note that the modern Canarians show lower cranial indices, due to a lessened breadth of the skull. The length-height index of our subgroup is lower than that of any of the groups brought into comparison, except the inhabitants of the Azores (Portuguese). But it is very close to the Portuguese, Spanish, and ancient Egyptians. The modern Canarians show somewhat higher length-height indices and the Arabs are decidedly higher. In the breadth-height index the "Mediterraneans" again resemble the modern

Portuguese and Spanish. The modern Canarians and the inhabitants of the Azores show much higher values. They are very close to akrocephaly. Oetteking [1] gives a mean of 95.6 for the combined sexes of the ancient Egyptians, which is also somewhat higher than the mean of our subgroup (94.3). Yet the breadth-height index of the entire Guanche series from Tenerife is still lower (93.3).

The upper facial index of our subgroup (54.8) is almost leptorrhine. It falls a little below that of the Spanish (55.5), and that of the ancient Egyptians (55.6). The modern Canarians seem to have inherited or acquired the low, broad face of the ancient inhabitants

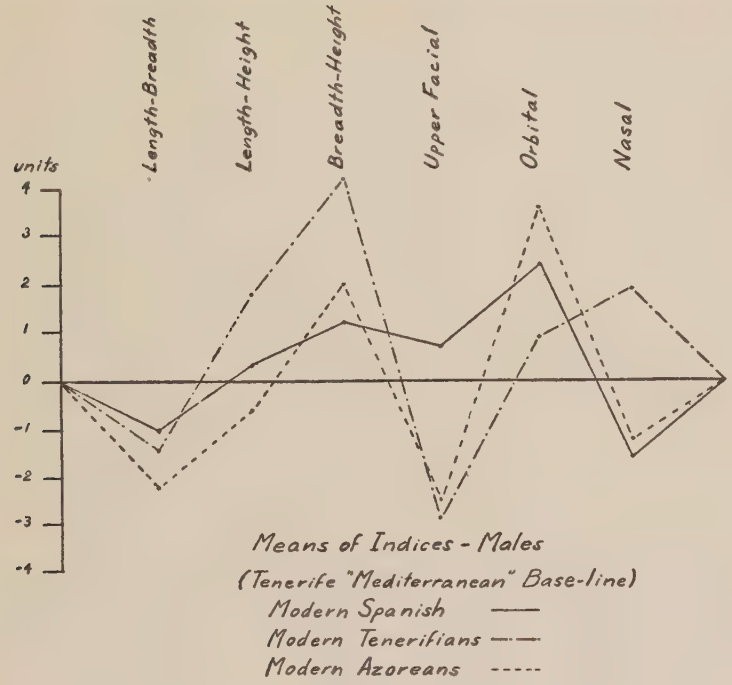


FIG. 25

of the archipelago, for their mean upper facial indices are almost euryene (51.9 in Tenerife and 50.4 in Gran Canaria). The mean values of the facial indices of the modern inhabitants of these islands are even lower than those of the ancient crania. A similar tendency to shortness of face is found in the modern Azoreans.

The mean of the orbital index in our subgroup is considerably higher than that of the whole Guanche series. But it is lower than most of the Mediterranean subgroups here cited, except the Portuguese. The modern Canarians have not inherited the microseme orbits of their predecessors. The nasal index of the " Mediterraneans " is just over the lower border of mesorrhiny. The Azoreans, Portuguese, Spanish, and Algerian Arabs are leptorrhine. The Egyptians, doubtless because of Negroid admixture, are strongly mesorrhine, and this

[1] B. Oetteking, Kraniologische Studien an Altägyptern, Arch. f. Anthrop., Brnschwg., 1909, vol. 36 (n. s. vol. 8), p. 43.

is also the case with the modern Canarians. The entire Guanche series of Tenerife has a mean nasal index of 47.5.

There are no indicial features of the Tenerife "Mediterraneans" which prevent our assigning them to the Mediterranean race. They are a little broader with reference to their cranial length than some of the purer stocks, and they show slightly lower length-height and breadth-height indices than many of the other groups. I do not suppose that we are dealing with a "pure" racial type in this subgroup, but I do not think that anyone who studies the tables of means of measurements and indices can fail to recognize the close resemblance of this subgroup to the modern Spanish. Spain is the most predominantly "Mediterranean" in its population of any of the European countries, with the possible exception of Portugal, and the figures of Hoyos Sáinz and de Aranzadi[1] are based upon 3000 crania of both sexes and at least half the number were undoubtedly males. Table 153 shows that in the means of the measurements recorded the "Mediterranean" subgroup of Tenerife males differs very little from the average of the Spanish male crania. The main discrepancies are in a somewhat shorter and slightly broader head in our group and in a slightly lower head-height and smaller face-height. These "Mediterranean" crania from the burial caves of Tenerife are much more like modern Spanish crania than like modern Canarian or North African crania. They are not *pure* Mediterranean, because they still show the modification due to the intermixture of a broad-head element.

TABLE 153. MALES. COMPARATIVE TABLE OF MEANS OF MEASUREMENTS OF "MEDITERRANEAN" GROUPS

	Tenerife "Med."	Tenerife modern	Gran Canaria modern	Azores modern	Spanish modern	Arabs Algeria	Berbers Beni-Menacer
Glabello-occipital length	182.2	185.3	184.5	183.5	183.0	182.4	184.0
Breadth, maximum	138.8	138.5	137.5	135.6	138.5	136.2	136.0
Basion-bregma height	130.2	136.1	136.0	130.6	132.5	135.0	138.0
Cranial module	150.4	153.3	152.7	149.8	151.3	151.2	152.7
Bizygomatic diameter	127.4	130.6	130.5	125.6	127.5	128.0	..
Nasion-alveon height	68.2	67.8	65.7	65.7	71.5	..	..
Mean differences	0	2.58	3.00	1.64	1.36	..	..

THE CANARY ISLANDS BRACHYCEPHALS

Since the method of classifying crania by morphological type seems, in this series, to be dependent largely upon facial features, so far as indicial differences are concerned, and since it fails to distinguish the few brachycephals as a morphological group, I have selected all of the male brachycephalic crania from Tenerife, Gomera, and Gran Canaria (22 to 26 in number) and have calculated the means and standard deviations of their indices, in order to discover whether or not they form indicially a type differentiated from that of the whole Tenerife series and from the subgroups distinguished by various means. Table 154 shows

[1] L. de Hoyos Sáinz, and T. de Aranzadi, Notes préliminaires sur les "Crania Hispanica," Bull. et Mém. Soc. d'Anthrop., Paris, s. 6, vol. 4, 1913, pp. 81–94.

TABLE 154. Means of Indices of All Male Canary Brachycephals Contrasted with all Tenerife Males

	Tenerife		Brachycephals			
	Mean	St. D.	Mean	St. D.	Excess	3 × p.e.
Length-breadth	75.99±0.10	2.30±0.07	81.32±0.18	1.29±0.13	*5.33±0.20*	0.60
Length-height	70.47±0.10	2.40±0.07	72.65±0.34	2.30±0.25	*2.28±0.34*	1.02
Breadth-height	93.52±0.18	4.15±0.13	88.70±0.47	3.11±0.33	*−4.82±0.50*	1.50
Upper facial	52.14±0.14	3.08±0.10	51.58±0.34	2.23±0.24	−0.56±0.37	1.11
Nasal	47.46±0.19	4.48±0.14	49.67±0.48	3.35±0.34	*2.21±0.52*	1.56
Mean orbital	81.42±0.21	4.97±0.15	83.78±0.71	4.93±0.50	*2.46±0.74*	2.22
Maxillo-alveolar	119.96±0.31	6.65±0.22	123.05±0.98	6.30±0.69	*3.09±1.02*	3.06
Gnathic	93.25±0.15	3.42±0.11	92.81±0.53	3.59±0.37	−0.47±0.55	1.65

these means and standard deviations of the brachycephalic group set against those of the Tenerife male series, together with the excesses and three times the probable errors of the differences of their means. Of eight indices of which the means are tabulated, the brachycephalic group shows differences in excess of three times the probable error of the differences in six indices. Naturally there would occur a significant difference in the length-breadth index because the brachycephalic group has been selected on this basis. But there is a significant excess in the length-height and a significant deficiency in the breadth-height index on the part of the brachycephalic group. These compensatory differences are to be expected. The skulls that are broader with reference to their length are also higher with reference to their length, and broader with reference to their height.

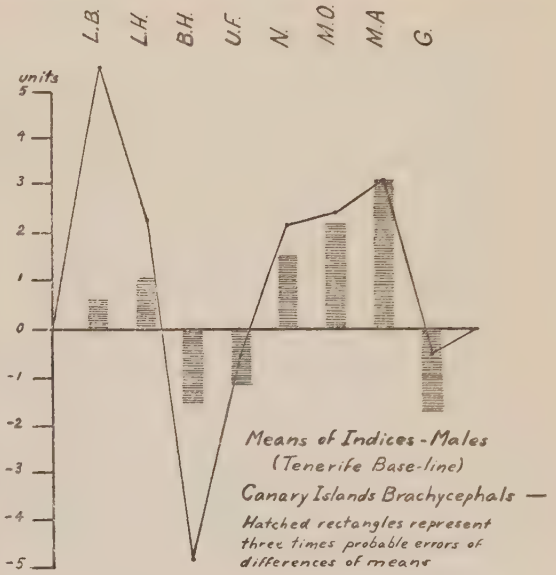


Fig. 26

With respect to the indices of the face, this brachycephalic group shows almost as clear differentiation from the Tenerife males at large, as in the skull-vault. The upper facial index is, however, mesene, and does not differ significantly from that of the entire group. The nasal index shows a decided tendency toward a relatively shorter and broader nose-form than is found in the Tenerife group as a whole. The mean index of the brachycephalic group is high mesorrhine, bordering on platyrrhiny. The mean orbital index is again mesoconch, but considerably higher than that of the Tenerife male series, which borders upon a chamaeconch mean. This is somewhat surprising, in view of the low mesene upper facial index, which might lead one to expect low and broad orbits. The maxillo-alveolar index is extremely variable in this subgroup, as in all of the groups, but seems to be signif-

icantly higher in the brachycephals. The gnathic index shows no significant deviation from that of the Tenerife male series.

It should be noticed that the standard deviations of indices in this brachycephalic group are significantly lower than those of the corresponding indices in the Tenerife series with respect to the three indices of the cranial vault, the upper facial, and the nasal indices, although the brachycephalic sample includes only 22 to 26 crania. This implies a certain consistency in the group, which may mean that it is something more than an arbitrarily selected sample. Perhaps the most surprising feature of this table is the indication of somewhat higher orbital indices in this group than in the whole series. This is true also of the "Nordic" morphological group, and the "Mediterranean" morphological group. It forces one to conclude that the extremely microseme orbits which are so markedly characteristic of the Canary crania cannot be due to the ingredient types which have been distinguished at the present stage of our investigation.

TABLE 155. MALES. MEASUREMENTS AND INDICES OF CANARY ISLANDS BRACHYCEPHALS
(Number of crania 20–26)

	Mean	Standard Deviation	V	All Tenerife males V
Glabello-occipital length	179.64±0.74	5.59±0.52	3.11±0.29	2.88±0.09
Breadth, maximum	146.27±0.56	4.25±0.40	2.90±0.27	3.48±0.10
Height, basion-bregma	130.96±0.67	5.00±0.48	3.82±0.36	3.71±0.12
Minimum frontal diameter	97.44±0.59	4.36±0.42	4.47±0.43	5.12±0.15
Bizygomatic diameter	132.04±0.84	5.88±0.60	4.45±0.45	4.09±0.13
Nasion-alveon height	67.84±0.52	3.83±0.36	5.65±0.54	6.69±0.21
Length-breadth index	81.32±0.18	1.29±0.13	1.59±0.16	3.03±0.09
Length-height index	72.65±0.34	2.30±0.25	3.17±0.34	3.40±0.10
Breadth-height index	88.70±0.47	3.11±0.33	3.51±0.37	4.43±0.14
Upper facial index	51.58±0.34	2.23±0.24	4.32±0.47	5.91±0.27
Nasal index	49.67±0.48	3.35±0.34	6.74±0.68	9.43±0.28
Mean orbital index	83.78±0.71	4.93±0.50	5.88±0.60	6.10±0.18
Maxillo-alveolar index	123.05±0.98	6.30±0.69	5.12±0.56	4.68±0.16
Gnathic index	92.81±0.53	3.59±0.37	3.87±0.40	3.66±0.11

In Table 155 the means of certain measurements and indices of the Canary Islands brachycephalic males are given, together with their standard deviations, coefficients of variation, and the coefficients of variation of the corresponding measurements and indices of the entire male Tenerife series. It is noticeable that the variabilities of the selected brachycephalic group are only slightly smaller than those of the total series of Tenerife males. The mean of the coefficients of variation of the six principal diameters of the skulls of the subgroup is 4.07, and of the entire series 4.33. The mean of the coefficients of variation of eight indices is, in the case of the subgroup, 4.28, and of the whole series 5.08. In three of the six measurements and in three of the eight indices the variabilities of the subgroup are greater than those of the total series. This brachycephalic subgroup cannot be considered very homogeneous. It does not appear that by selecting all crania with length-breadth indices above 80 we have succeeded in isolating a pure type. We may, nevertheless,

attempt to compare this subgroup with crania of other brachycephalic groups, with the hope of ascertaining any relationship which may be apparent from a comparison of means and constants.

It is fitting first of all to compare our brachycephalic crania with those measured and described by Bertholon and Chantre in the Tunisian area.[1] Unfortunately these are almost too few in number to afford any satisfactory indication of their affinities. The following table is a comparison of means of the available measurements and indices.

TABLE 156. Males. Comparison of Means of Measurements and Indices of North African Brachycephals

	Canarians (20–26)	North Africans Roman period (3)	North Africans modern (6)	Armenians (Chantre) (5)
Glabello-occipital length	179.64	176.00	179.00	173.00
Breadth, maximum	146.27	143.00	147.00	141.00
Basion-bregma height	130.96	129.00	130.00	136.00
Length-breadth index	81.32	81.33	82.08	83.23
Length-height index	72.65	73.18	74.65	78.61
Breadth-height index	88.70	90.62	91.16	94.44
Orbital index	83.78	75.00	79.84	92.52
Nasal index	49.67	48.98	45.57	43.80

One notices first of all that these North African brachycephals are sub-brachycephalic. The cranial lengths are somewhat longer than those usually found in the real short-heads. The length-breadth index hovers about the lower limits of the class. The length-height indices are somewhat higher in the mainland groups than in the islanders, as are also the breadth-height indices. The orbital indices are decidedly lower, and in the modern Tunisian group the nasal index is markedly leptorrhine. The comparison with the small Armenian series measured by Chantre, which I have taken from Bertholon and Chantre, shows that the Armenoid brachycephals are quite unlike any of these African groups. But the general conclusion to be derived from this table is that the numbers of North African brachycephals described by Bertholon and Chantre are too small to be of value. Like our Canary Islanders they appear to be rather long, and inclined to platycephaly. I have not been able to utilize the facial indices of the continental group, but the Tunisians seem to have been euryene.

For comparison with the Canary Islands brachycephals I have utilized the Alpine Swiss and Mongoloid Telenget and Kalmuck series studied by Reicher;[2] the Bavarians of the Foot-hills studied by Ried,[3] and the Tyrolean series of Frizzi.[4] These series enable us

[1] Bertholon and Chantre, op. cit., p. 343.

[2] M. Reicher, Untersuchungen über die Schädelform der alpenländischen und mongolischen Brachycephalen. Zeitschrift für Morph. und Anthr., vol. XV, 1913, pp. 422–560; vol. XVI, 1914, pp. 2–64.

[3] H. A. Ried, Beiträge zur Kraniologie der Bewohner der Vorberge der bayerischen Alpen. Beitr. z. Anthrop. u. Urgesch. Bayerns. vol. 18, 1911, pp. 1–111.

[4] E. Frizzi, Ein Beitrag zur Anthropologie des "Homo alpinus Tirolensis." Mitteilg. d. Wiener anthrop. Ges., vol. 39, 1909, pp. 1–65.

TABLE 157. MALES. COMPARATIVE TABLE OF MEASUREMENTS AND INDICES OF ALPINE AND MONGOLOID BRACHYCEPHALS

	Canary Islands Brachycephals	Disentis Type (Reicher)	Tyroleans (Frizzi)	Bavarians (Ried)	Telengets (Reicher)	Kalmucks (Reicher)
Glabello-occipital length	179.64±0.74	173.0	176.0	173.0	175.0	179.0
Breadth, maximum	146.27±0.56	148.0	149.0	146.0	150.0	145.0
Basion-bregma height	130.96±0.67	....	130.0	134.0	128.0	127.0
Minimum frontal diameter	97.44±0.59	99.0	99.0	99.0	94.3	93.5
Bizygomatic diameter	132.04±0.84	131.2	134.0	131.0	137.0	135.1
Nasion-alveon height	67.84±0.52	66.9	71.0	69.0	68.5	70.4
Length-breadth index	81.32±0.18	85.3±0.34	84.2	84.5	86.4±0.35	81.1±0.41
Length-height index	72.65±0.34	75.5±0.29	73.8	75.6	73.7±0.26	70.9±0.48
Breadth-height index	88.70±0.47	88.4±0.38	87.5	89.4	85.6±0.38	87.6±0.62
Upper facial index	51.58±0.34	50.0±0.34	52.5	52.4	51.0±0.33	52.2±0.48
Nasal index	49.67±0.48	47.1±0.37	47.5	49.3	51.4±0.45	51.0±0.48
Maxillo-alveolar index	123.05±0.98	117.7	..	118.1	124.8	123.4

TABLE 158. MALES. COMPARATIVE TABLE OF COEFFICIENTS OF VARIATION OF BRACHYCEPHALS

	Canary Islands Brachycephals	Disentis Type (Reicher)	Telengets (Reicher)	Kalmucks (Reicher)
Length-breadth index	1.59±0.16	3.21±0.21	4.74±0.29	3.30±0.36
Length-height index	3.17±0.34	3.71±0.27	4.14±0.25	4.39±0.48
Breadth-height index	3.51±0.37	4.07±0.30	5.10±0.31	4.57±0.49
Upper facial index	4.32±0.47	5.60±0.48	5.85±0.45	5.78±0.65
Nasal index	6.74±0.68	7.36±0.55	10.10±0.62	6.02±0.67

TABLE 159. MALES. COMPARATIVE TABLE OF DIFFERENCES OF MEANS OF INDICES (Basis of Canary Islands Brachycephals)

	Disentis Type (Reicher)		Telengets (Reicher)		Kalmucks (Reicher)	
	Excess	3 × p.e.	Excess	3 × p.e.	Excess	3 × p.e.
Length-breadth index	*+3.98±0.38*	*1.14*	*+5.08±0.39*	*1.17*	−0.22±0.44	1.32
Length-height index	*+2.85±0.44*	*1.32*	+1.05±0.43	1.29	*−1.75±0.58*	*1.74*
Breadth-height index	−0.30±0.59	1.77	*−3.10±0.59*	*1.77*	−1.10±0.77	2.31
Upper facial index	*−1.58±0.48*	*1.44*	−0.58±0.47	1.41	−0.62±0.58	1.74
Nasal index	*−2.57±0.60*	*1.80*	+1.73±0.65	1.95	+1.33±0.68	2.04

to determine the relationship of our groups to central European and Asiatic brachycephals. Tables 157–159 enable us to compare the means and variabilities and differences of some of the most important measurements and indices. The Canarians have longer skulls than any of the true brachycephals, and have substantially the same average length as the subbrachycephalic Kalmucks. In height the Canary Islands brachycephals are well above the means for the Mongols, and are to be classified with the Alpines. In minimum frontal diameter the Canary group falls between the very narrow-browed Mongols and the Alpines, but approximates more closely to the European groups. The breadth of the face (bizygomatic diameter) falls within the range of the European brachycephals, and is considerably below the mean of the Mongoloids, while the facial heights in all groups except

the Tyroleans, are very closely similar. In the measurements of the cranial vault and of the face the Canarians resemble alternately the Mongoloids and the Alpines.

In the length-breadth index the Canary Islands group has the same mean as the Kalmuck Mongoloid series, and in the tendency toward chamaecephaly also it resembles the Mongoloids rather than the Alpines. On the other hand the tapeinocephaly of the Canarians yields a mean breadth-height index approximating to the Alpine means, and somewhat above those of the Mongoloids. The upper facial indices of all of the groups considered yield low mesene averages, indicating a predominance of short, broad faces. In the nasal index the high mesorrhine value of our group places it somewhat above the

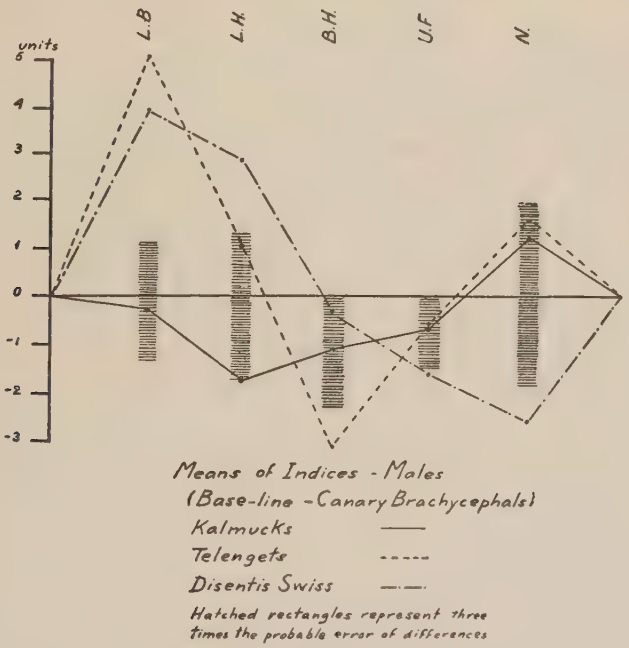


FIG. 27

leptorrhine and low mesorrhine Alpines, and below the chamaerrhine Mongols. In the maxillo-alveolar index the short, broad palates of the Canarians are definitely more Mongoloid than Alpine. I have been unable to utilize the orbital index for purposes of comparison, because of differences in the technique of measurement.

Table 158 shows the coefficients of variation of the different groups for the indices tabulated. Our Canary Islanders show smaller variabilities than the other groups. The mean variabilities of the groups for the five indices considered are as follows: Canarians 3.87, Disentis Swiss 4.79, Kalmucks 4.87, Telengets 5.98. Of course, ours is a group selected for its brachycephaly, and shows a smaller variability for this very reason.

Finally, in Table 159 are recorded the excesses of the Disentis series, the Telenget series, and the Kalmuck series of Reicher, over the means of the Canary Islands group,

together with the probable errors of the differences in the means and three times the probable errors. It is to be observed that in four of the five indices the differences between the Alpine series and our Canary Islands series are in excess of three times their probable errors. Such differences occur in two of the five indices when the Telenget group is compared with our series, and in but one of five indices in the case of the Kalmucks. Clearly, as regards the five indices considered our Canarians resemble most closely the Mongoloid Kalmucks.

In this connection it is interesting to note that of seventeen brachycephalic males in the Tenerife series I have classed only two as " Alpine," when assigning the skulls to a racial type on the basis of morphological observations, and when the actual material was being handled and observed. Most of them were called " Guanches." Naturally these assignments were made without any knowledge of the indices, which had not yet been calculated, and the large number of high mesocephals probably prevented me from distinguishing the few barely brachycephalic crania of the series. In Gomera the brachycephalic element was more noticeable. The truth of the matter is, however, that most of these Canary Islands brachycephals do not look " Alpine." They are too much inclined toward platycephaly. Furthermore they are often frankly platyrrhine. In Friesland are found brachy-chamaecephals the dimensions of whose brain-cases are quite similar to those of the Canary Islanders.[1] But these Frisian crania are usually leptoprosopic, leptorrhine, and hypsiconch. Crania similar to those of the Frisians are also found occasionally among the Basques, especially the Spanish Basques.[2]

Most of the Canary Islands brachycephals are orthocephalic. There are no hypsicephals in the Tenerife male series, but several which exhibit a low degree of hypsicephaly occur in Gomera. It seems probable that the brachycephalic element here considered represents a somewhat incomplete segregation of one of the strains which entered into the mixture that has resulted in the predominance of a fused and relatively homogeneous, mesocephalic type in the Canary Archipelago. I doubt that this segregation has been sufficiently complete to reproduce a pure ancestral type. I am of the opinion that some of these brachycephals are due to the crossing of small dolichocephals with large mesocephals, in which the short head-length of one parent and the large head-breadth of the other is inherited. This, of course, does not preclude the supposition that the brachycephals are the survivals of an original immigrant type or race, but it is more likely that they are due to a disintegration of the predominant mesocephalic type or to a recombination. I have discussed this question in more detail elsewhere.[3]

Certainly from the standpoint of measurements and indices, the Canary Islands brachycephals show affinities both with the Central European Alpines and with the Asiatic Mongols. It is equally clear that they are closer to the Mongols than to the Alpines. If

[1] J. A. J. Barge, Beiträge zur Kenntnis der niederländischen Anthropologie, Zeitschr. f. Morph. u. Anthrop., Stuttgart, vol. 16, 1914, pp. 329–396, 465–524.

[2] T. de Aranzadi, Sur quelques corrélations du trou occipital des crânes Basques. Bull. et Mém. Soc. d'Anthrop., Paris, s. 6, vol. 5, 1914, pp. 325–382.

[3] Infra, p. 267 sq.

TABLE 160. Comparative Table of Morphological Features of Tenerife Male Brachycephals (Percentages)

	Tenerife Brachycephals	All Tenerife Males	Gomera Males
Brow-Ridges			
Absent	0	2.77	5.88
Small	31.25	21.82	20.58
Medium	62.50	52.34	44.11
Large	6.25	22.99	29.40
Nasion Depression			
Absent	6.25	5.57	8.82
Small	31.25	26.29	11.76
Medium	50.00	47.01	61.76
Large	12.50	21.11	17.64
Nasal Bridge			
High, narrow	43.75	39.28	11.76
Medium, medium	37.50	38.49	50.00
Low, broad	6.25	3.57	8.82
Medium, broad	6.25	6.34	17.64
Low, narrow	6.25	2.38	0
Lower Borders of Nasal Aperture			
Ill-defined	43.75	34.53	26.46
Medium	0	3.61	11.76
Sharp	56.25	61.84	61.76
Orbits			
Low	12.50	38.49	52.94
Medium	43.75	32.53	29.41
High	43.75	28.97	17.64
Suborbital Fossae			
?	12.50	13.88	14.70
Absent	0	1.19	0
Shallow	6.25	17.06	17.64
Medium	68.75	49.60	41.17
Deep	12.50	18.75	26.46
Malars			
Small	37.50	19.12	18.18
Medium	43.75	43.02	48.48
Large	18.75	22.31	24.24
Very large	0	15.53	9.09
Zygomata			
Small	37.50	18.54	18.18
Medium	37.50	39.91	48.48
Large	25.00	19.76	24.24
Very large	0	21.77	8.82
Alveolar Prognathism			
?	18.75	19.44	23.52
Absent	18.75	5.95	0
Slight	6.25	21.82	29.41
Medium	31.25	38.49	35.29
Pronounced	25.00	17.85	11.76
Mastoids			
Small	6.25	9.92	35.29
Medium	31.25	38.09	41.17
Large	62.50	51.98	23.52
Serration of Sutures			
Simple	6.25	7.93	27.27
Medium	43.75	46.42	66.67
Complex	50.00	45.63	6.06

the Canary Islanders really included a Mongoloid element which is represented in this brachycephalic subgroup, Mongoloid characteristics should manifest themselves in the morphological observations on these crania. We should expect to find prominent malars, shallow suborbital fossae, absence of the nasion depression, low nasal bridge, poor development of the nasal spine, small brow-ridges and high orbits, shallow glenoid fossae and an absence of the postglenoid tubercle, hyperbolic or elliptical palates with low roofs, and shovel-shaped incisors. We should also expect rather small mastoids and a rather simple sutural pattern.

In Table 160 the 16 brachycephalic male skulls from Tenerife have been compared with all Tenerife males and with Gomera males, with respect to the development of some of the morphological features which may be expected to show Mongoloid features. It is clear that the Tenerife brachycephals show a smaller development of brow-ridges than do the Tenerife or Gomera males in general. There are also a larger number of brachycephalic males with a slight depression at nasion, and fewer with pronounced depression at nasion, than in the other two series. These two features incline the brachycephals toward the Mongoloid type. But when we consider the nasal bridge it is found that the Tenerife brachycephals show higher percentage of high, narrow bridges than do either of the other groups. This is not a Mongoloid feature. The brachycephals have a larger proportion of ill-defined lower borders of the nasal aperture than Tenerife or Gomera males, which is another point for the Mongoloid theory. Furthermore the orbits of the brachycephals are, in a larger percentage of cases, high. But shallow suborbital fossae are commoner in both Tenerife and Gomera males than in Tenerife brachycephals. Small malars are also more common among the brachycephals and also small zygomata, whereas in Mongoloids we expect the reverse to be true. Alveolar prognathism is absent in a higher percentage of the brachycephals than in the two comparative series. The size of the mastoid processes is sharply differentiated from the predominating small or medium type in Gomera, and conforms to the generally large type in Tenerife. Serration of sutures approaches to the Tenerifian complexity rather than to the relative simplicity prevalent in Gomera. In fact the brachycephals show the highest degree of sutural complexity.

Summarizing, it is found that of eleven characters examined, four show possibly Mongoloid developments, and seven show non-Mongoloid developments. The most significant Mongoloid features — large malars, shallow suborbital fossae, low nasal bridge, simple sutures — are conspicuously lacking from this sample. It cannot be said that the Tenerife brachycephals are morphologically Mongoloid. Taking into consideration both metrical and morphological data it may be concluded that a mixture of Mongoloid and Alpine features are exhibited. The Gomera crania show Mongoloid features more strongly, as regards the morphological characters.

The results of this investigation raise the question as to the possibility of the Alpine race being of hybrid origin, the result of crossing a fundamentally dolichocephalic, leptor-

rhine European stock with a brachycephalic, platyrrhine Asiatic stock. The dominance of brachycephaly and leptorrhiny is more than probable. If the Alpine race is of independent origin, it must, at any rate, be granted that it usually is found with a certain amount of Mongoloid admixture.

SUMMARY

The results of the foregoing chapter may be summarized as follows:

(1) The combinations of grades of development of the 22 morphological cranial features are so numerous in the racially mixed Tenerife series that they cannot be used as a basis for the establishment of types. This is probably due to multiple unit inheritance.

(2) Dividing the crania according to mean morphological rating, it is found that the low morphological group includes a disproportionate number of dolichocephals and none of the brachycephals.

(3) When the Tenerife male crania are divided according to the assignment of morphological racial type, it is found that the " Guanche " subgroup shows the lowest mean morphological rating, the " Nordic " subgroup holds an intermediate position, and the " Mediterranean " subgroup has the highest mean rating.

(4) " Guanche " type crania are associated with euryene faces positively, and with leptene faces negatively. The "Nordic" and "Mediterranean" subgroups both show precisely opposite associations.

(5) " Guanche " type crania are positively associated with chamaerrhine noses and with chamaeconch orbits, less strongly with mesorrhine noses and mesoconch orbits. " Nordic " type crania are positively associated with leptorrhine noses and with hypsiconch orbits. " Mediterranean " type crania are positively associated with hypsiconch orbits, but the nasal form is variable.

(6) " Guanche " type crania tend to be associated with large size, " Nordic " type with medium size, and " Mediterranean " type with small size.

(7) Combinations of types of the length-breadth and upper facial index are strongly associated with combinations of the nasal and mean orbital indices.

(8) The means of indices of type " Nordics " are very similar to the means of " Nordics " selected by indicial criteria.

(9) The means of the " Nordic " and " Mediterranean " subgroups are so different from the means of the indices of the total Tenerife series that they cannot be considered as random samples of the Tenerife male universe. The " Nordic " type group has lower breadth-height index mean, higher upper facial index mean, lower nasal index mean, and higher orbital index mean. The " Mediterranean " type group is especially differentiated from the means of the whole series in its higher upper facial and mean orbital index. Its palatal index is significantly lower than that of the total series. The "Guanche" subgroup has lower orbital index and higher nasal index than the series at large.

(10) The female type subgroups show differentiations similar to the corresponding male type subgroups. But their nasal indices are consistently higher than in the male subgroups. The orbital indices are higher in the female subgroups than in the male, except in the case of the " Mediterranean " type females.

(11) The " Nordic " subgroup and the " Large Dolichocephalic " subgroup of Tenerife males show close resemblances to certain Nordic and mixed Nordic groups in the means of their measurements and indices. The " Nordic " subgroup most closely resembles the Spanish Basques, who are probably a mixture of Nordic and Mediterranean elements. The "Large Dolichocephalic subgroup" resembles each of the "pure Nordic" Germanic groups more closely than they resemble each other.

(12) The " Mediterranean " type resembles the modern Spanish most closely, next the ancient Egyptians and modern Portuguese. Its resemblance to the modern inhabitants of Tenerife and Orotava is less marked with respect to means of measurements and indices.

(13) The Canary Islands brachycephals are sharply differentiated from the rest of the series in all indices except the upper facial and gnathic indices. Craniometrically they show close affiliation with Mongoloid Kalmucks, morphologically with Alpine Europeans.

CHAPTER X

CORRELATIONS AND INHERITANCE

CORRELATION OF CRANIAL AND UPPER FACIAL DIAMETERS IN TENERIFE CRANIA

TABLE 161. Tenerife Males. Correlations

	Length, g. o.	Breadth maximum	Height basion-bregma	Min. frontal diameter	Nasion-alveon height	Bizygomatic diameter
Length, glabello-occipital	....	0.586±0.028	0.520±0.032	0.396±0.036	0.475±0.035	0.549±0.031
Breadth, maximum	0.586±0.028	....	0.304±0.039	0.459±0.034	0.452±0.035	0.516±0.032
Height, basion-bregma	0.520±0.032	0.304±0.039	....	....	0.252±0.042	0.233±0.044
Minimum frontal diameter	0.396±0.036	0.459±0.034	....	....	....	0.441±0.036
Nasion-alveon height	0.475±0.035	0.452±0.035	0.252±0.042	....	....	0.491±0.035
Bizygomatic diameter	0.549±0.031	0.516±0.032	0.233±0.044	0.441±0.036	0.491±0.035	....

Table 161 gives the correlation coefficients for facial and cranial diameters in so far as it has seemed profitable to calculate them. The glabello-occipital length shows higher mean correlation with the other measurements than the rest of the diameters tabulated. The basion-bregma height is highly correlated with length alone, and the bizygomatic diameter is somewhat more closely correlated with length and breadth than with upper facial height. These coefficients of correlation run rather high, and it is suggested that these high values are due partially to the great variation in size which is a feature of the series. Heterogeneity of material often tends to increase correlation. It is notable that the correlations between measurements in the female series, most of which have been worked out by the coefficient of variation method and may be seen in Table 175, are usually much lower than in the male series. The exceptions to this are the correlation of nasal height and nasal breadth, and that of basion-nasion and basion-prosthion diameters. This is probably due to the tendency of females in a mixed racial group to adhere more closely to one or the other of their parental racial types than do the males, who present a blend of features from their several ancestral strains. This is clearly shown in the frequency polygons of various measurements and indices. In these the Tenerife males usually show fairly symmetrical distributions while the females often exhibit distinct bimodality. I should be inclined to attribute the higher values of the correlation coefficient of the nasal diameters in the females to a general tendency toward platyrrhiny which is a sex character that manifests itself regardless of race and type. Similarly a female tendency toward prognathism perhaps accounts for the higher value in that sex of the correlation coefficient of basion-nasion and basion-

TABLE 162. TENERIFE MALES. CORRELATION OF GLABELLO-OCCIPITAL LENGTH AND MAXIMUM BREADTH

Maximum breadth	Glabello-Occipital Length																													
	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	
130	..	..	..	..	..	..	*2*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
131	..	..	..	..	..	..	..	..	..	..	..	..	..	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
132	..	..	..	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
133	..	..	..	..	..	..	..	*1*	..	..	..	..	..	..	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	2
134	..	..	..	..	..	2	..	..	..	*1*	..	..	*2*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
135	..	1	..	..	..	1	3	1	*1*	..	..	..	*1*	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
136	..	..	..	1	1	2	1	..	3	*2*	*2*	*1*	..	..	..	..	..	*2*	..	..	..	..	..	..	..	..	..	..	..	15
137	..	..	1	1	..	1	3	2	1	2	1	..	*1*	*2*	..	..	*1*	..	..	..	*1*	..	..	..	..	..	..	..	..	17
138	..	..	..	..	..	1	1	2	2	..	..	1	*1*	*1*	..	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	10
139	..	..	..	..	..	1	..	..	..	2	1	..	1	*2*	*2*	*3*	*1*	*1*	*1*	*1*	*1*	..	..	..	..	..	..	..	..	17
140	..	..	..	..	..	..	2	4	2	1	..	1	3	1	..	*3*	*1*	*1*	..	..	..	..	..	..	..	..	..	..	..	19
141	**1**	..	..	..	..	..	..	1	2	..	1	..	3	1	..	..	*1*	*1*	..	..	..	..	*1*	..	..	..	..	..	..	12
142	..	..	..	..	**1**	1	..	1	..	2	1	1	2	6	1	1	1	..	*2*	..	*2*	*1*	*1*	*1*	..	..	..	..	..	25
143	..	..	..	..	..	..	1	1	1	1	..	1	1	1	2	1	3	2	*1*	..	..	..	..	..	..	..	..	..	..	16
144	..	..	..	..	..	**1**	..	**1**	1	..	..	2	3	2	1	3	..	..	..	..	*2*	..	*1*	..	..	..	..	..	..	17
145	..	..	..	..	**1**	..	..	..	**1**	..	1	4	2	2	2	4	1	..	..	1	..	*1*	..	..	..	..	..	..	..	20
146	..	..	..	..	..	..	..	..	..	**1**	..	..	..	..	1	1	..	1	..	2	2	..	*1*	*1*	..	..	..	..	..	10
147	..	..	..	..	..	..	..	..	..	..	..	..	1	2	2	1	..	2	1	..	..	1	..	..	..	..	..	..	..	10
148	..	..	..	..	..	..	..	..	**1**	..	**2**	**2**	..	1	..	..	2	..	..	..	1	1	..	1	..	*1*	..	..	..	12
149	..	..	..	..	..	..	..	..	**1**	..	..	..	..	..	1	..	1	..	..	1	..	..	3	..	..	..	..	..	..	7
150	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	..	..	..	..	..	1	..	1		6
151	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	2
152	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**1**	**1**	..	..	..	..	..	..	1	..	..	..	..	3
153	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
154	..	..	..	..	..	..	..	..	..	..	..	..	**1**	..	..	..	..	**1**	..	..	..	..	..	..	..	..	..	..	..	2
155	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..		4
	1	1	1	2	4	12	11	14	16	12	9	13	22	22	13	19	14	13	7	7	9	4	8	4	2	3	1	1		245

alveon diameters. Usually the females in the Tenerife series show smaller standard deviations and smaller coefficients of variation in measurements and indices than do the males, and one might expect them to exhibit higher coefficients of correlation between the measurements. This, however, is not the case. The facts may be accounted for partially through the tendency already mentioned of females to adhere to ancestral types, and partially by the greater range in size of the males which increases both variability and correlation.

Correlation of glabello-occipital length and maximum breadth. Table 162 shows the correlation between glabello-occipital length and maximum breadth of the skull in Tenerife males. The coefficient of correlation is $.586 \pm .028$. A high correlation is perhaps to be expected in these diameters when, as in the present case, the series studied is predominantly mesocephalic. That it is unusually high may be gathered from the following comparative data taken from Martin.[1]

[1] Op. cit., p. 706.

TABLE 163. MALES. COEFFICIENT OF CORRELATION OF SKULL-LENGTH AND SKULL-BREADTH. (Martin)

Australians	0.313	Naquada	0.344	Tasmanians	0.452
French	0.089	Sioux	0.240	Melanesians	0.246
Germans	0.286	Eskimo	0.470	Guanches (Hooton)	0.586
Aino	0.432	Badeners	0.090		

It is apparent from this table that if high correlation between skull-length and skull-breadth is any indication of "purity" of race or of homogeneity of type the Guanches of Tenerife are to be considered among the least mixed of mankind. The question as to the purity of the Guanche type may be deferred, however, to a later stage of this investigation. For the present it may be suggested that homogeneity is quite possibly attained by a long-continued pan-mixture of very diverse racial elements.

TABLE 164. TENERIFE MALES. CORRELATION OF BIZYGOMATIC DIAMETER AND MAXIMUM BREADTH OF CRANIUM

Maximum breadth	Bizygomatic Diameter																											
	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	
130	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
131	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
132	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
133	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	3
134	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	5
135	..	..	1	..	1	..	..	2	..	1	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	8
136	1	1	..	1	..	1	2	3	..	2	1	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	15
137	..	..	..	1	..	..	..	2	..	1	..	3	1	2	1	1	2	..	..	..	..	..	..	..	..	..	..	..	14
138	..	..	..	1	..	..	..	..	1	1	1	2	..	..	1	1	1	..	..	..	..	..	..	..	1	..	..	..	10
139	..	1	..	..	..	..	1	..	..	..	..	1	1	3	2	..	..	2	1	..	1	..	..	..	..	..	..	..	13
140	..	1	..	1	..	2	..	..	1	2	1	2	..	2	3	..	..	..	1	2	..	..	..	..	..	..	..	..	18
141	..	..	..	..	..	1	1	1	2	1	..	..	..	3	1	..	1	..	2	..	..	..	..	..	..	..	..	..	13
142	..	..	..	..	..	..	1	..	1	2	2	3	1	3	2	..	3	1	2	..	1	1	1	..	..	..	..	..	24
143	..	..	..	..	1	..	..	2	..	1	1	2	1	3	2	1	..	..	1	..	..	..	..	..	1	..	..	..	16
144	..	..	..	..	..	..	1	..	1	..	2	1	..	..	1	1	1	1	3	1	1	..	..	..	..	..	..	..	14
145	..	..	..	..	..	..	..	1	1	1	1	4	2	1	..	1	3	..	2	1	..	..	..	..	..	..	..	..	18
146	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	1	1	1	1	1	..	1	..	..	..	..	..	..	9
147	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	2	..	..	..	1	1	1	..	8
148	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	2	1	1	..	..	..	..	..	1	..	..	1	10
149	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	2	..	..	2	..	..	..	..	..	..	7
150	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	..	..	..	1	..	1	1	..	..	..	6
151	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2
152	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	2
153	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
154	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	2
155	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	1	4
	1	3	1	4	3	5	7	12	8	13	11	20	10	21	16	15	16	10	18	5	5	7	2	1	6	1	2	2	225

Tenerife males. Correlation of bizygomatic diameter and maximum breadth. Table 164 shows the correlation of the bizygomatic diameter with the maximum breadth of cranium in Tenerife males. The coefficient of correlation is $.516 \pm .032$. Of 8 dolichoeuryene crania in the series 5 are found in the positive quadrants of the correlation table, indicating a normal relationship between facial breadth and cranial breadth. The other three are all to be found in the quadrant which contains crania with breadth below the mean and bizygomatic diameter above the mean. All of the 8 dolichocephalic disharmonic crania with one exception fall into the categories of either (*a*) skull-length above average and facial height disproportionately short, or (*b*) skull-breadth below average and facial breadth (bizygomatic) above average. The exception (cranium No. 400) is a very small

TABLE 165. TENERIFE MALES. CORRELATION OF GLABELLO-OCCIPITAL LENGTH AND NASION-PROSTHION HEIGHT

Nasion-prosthion height	Glabello-Occipital Length																													
	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	
55						1																							1
56																													0
57						1																							1
58									1																				1
59						1	1																						2
60						1				1																			2
61				1	1	1		1						1															5
62						1						1	1	1											1				5
63							1		1			1																	3
64	1			1		1		1					1	1	1														7
65							1	4	1	1		3	1	1		2	1				1								16
66			1		1	1	1		1	2	1			1	1			1		1									12
67						1		3	1	2	1	1	5		2														16
68						1	2		4		3		1	2	2	4					1		1						21
69		1			1					1			1		1		1	1			1								8
70								3	3	2	2	3	4	4	3	3	2	4	1	1	1	1	1		1	1	1		41
71							2					1	1	2	1	1	1			1	1	1						1	13
72							1		3			1	3	3		2	1	1	1			1	2						19
73						1		1					3	3		3	1	2	1		1					1			17
74					1					1	1	1	1	3	2		3		1			1	1						16
75													1			1		1						1					4
76										1			1			1		2		2			1						8
77						1												1					3	1					6
78									1		1						1		1										2
79																				1									1
80															1				1		1								3
81																					1								1
82																													0
83																										1			1
	1	1	1	2	4	12	9	13	15	11	8	12	24	22	14	17	11	13	6	6	8	4	9	2	2	3	1	1	232

skull with a length below average and a width below average, but with an extraordinarily short face. One may conclude that these dolicho-euryene crania represent simply unusual combinations of cranial and facial proportions which may be expected to occur occasionally in a mixed group.

CORRELATION OF INDICES IN TENERIFE CRANIA

TABLE 166. Correlation of Cranial and Facial Indices

	Males		Females and Doubtful	
	Number	r	Number	r
Length-breadth and length-height	...	....	80	0.454±0.060
Length-height and breadth-height	...	....	79	0.514±0.056
Length-breadth and upper facial	208	−0.031±0.047	64	0.247±0.079
Upper facial and mean orbital	214	0.283±0.042	..	....

Correlation of length-breadth (cranial) and upper facial indices.

The lack of correlation between length-breadth and upper facial indices in our series naturally leads us to a further analysis of the correlations of the measurements concerned in the calculation of the indices in question. It appears from Table 165 that a marked positive correlation exists between the glabello-occipital length and the nasion-prosthion (upper facial) height. The coefficient of correlation is .475±.03. In the correlation table dolicho-euryene crania of the first grade of disharmony are printed in black-face numerals. Eight such crania are represented in the correlation table, six of which are found in the upper right-hand quadrant, which includes all crania above the mean in length and below the mean in upper facial height. This seems to indicate that dolicho-euryene crania in this series owe their disharmony largely to association of small facial height with large cranial length. Fifteen other crania in this same negative quadrant belong to the second grade of disharmony (dolicho-mesene or meso-euryene). It appears then that the crania in this quadrant are, for the most part, those in which the normal relationship of length and facial height does not obtain.

The question as to the relationship of the cranial and upper facial indices in skulls from Tenerife assumes an unusual importance because of the efforts which have been made to attribute the Guanches to the so-called Cro-Magnon race on the basis of a common disharmony in the relations of these indices. The Cro-Magnon type is supposedly characterized by a long and narrow skull, to which is joined a short and very broad face. This is called cranial disharmony on the assumption that a long and narrow face is naturally associated with a long and narrow skull. The association of a long and narrow face with a short and broad skull is, according to this view, the opposite kind of disharmony.

This question may be examined from the following points of view: (*a*) To what extent do crania from Tenerife exhibit the type of cranial disharmony attributed to the Cro-Magnons? (*b*) Is cranial disharmony a racial characteristic or evidence of racial mixture?

Two grades of disharmony with regard to the cranial index and the upper facial index may be distinguished. These are: (1) dolichocephalic euryene crania and brachycephalic

TABLE 167. MALES. CORRELATION OF CRANIAL AND UPPER FACIAL INDICES

Cranial index	Upper Facial Index																				
	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	
70	..	..	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	3
71	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	2
72	..	..	..	..	..	2	..	..	1	1	..	3	..	..	..	..	..	..	..	..	7
73	..	..	..	..	..	..	..	3	3	2	2	4	..	1	..	..	..	..	..	..	15
74	..	..	..	..	1	2	1	3	1	4	5	1	2	4	1	1	..	1	..	..	27
75	..	..	..	1	..	3	3	6	4	5	1	3	3	..	1	1	..	..	..	..	31
76	1	..	1	2	1	3	1	3	2	5	4	3	7	2	1	3	..	..	..	..	39
77	..	..	..	2	..	1	..	3	5	8	4	3	2	3	1	..	..	..	..	1	33
78	..	..	..	1	..	1	..	3	3	1	2	3	2	3	2	..	1	..	..	..	22
79	..	1	..	..	..	..	2	3	1	..	1	..	3	1	..	1	..	..	..	..	13
80	..	..	..	1	..	..	2	1	3	1	1	1	..	..	..	..	..	..	..	..	10
81	..	..	..	..	..	..	..	..	2	1	..	..	..	1	..	..	..	..	..	..	4
82	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
83	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
	1	1	1	7	2	14	11	25	26	29	20	21	19	15	7	6	1	1	0	1	208

σ Cranial Index = 2.327 ± 0.07. σ Upper Facial Index = 3.152 ± 0.10. $r = -.031 \pm .047$.

TABLE 168. FEMALES. CORRELATION OF CRANIAL AND UPPER FACIAL INDICES

Upper facial index	Cranial Index																	
	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	
42	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
43	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
45	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
46	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
47	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	2
48	..	..	..	..	..	..	..	1	1	..	2	2	..	1	..	..	..	7
49	..	..	..	..	..	..	1	1	2	..	..	..	..	..	1	..	..	5
50	..	..	..	..	..	..	..	2	1	3	1	2	..	1	..	..	..	10
51	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..	3
52	..	..	..	..	..	..	..	..	1	1	3	1	1	1	..	..	..	8
53	..	..	..	..	..	1	..	1	1	1	..	2	1	..	..	..	..	7
54	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	3
55	..	..	..	..	..	..	..	1	3	..	..	3	1	..	..	..	..	8
56	..	..	..	..	..	..	..	..	3	..	..	..	1	..	..	..	1	5
57	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2
58	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
59	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
	1	0	0	0	0	1	2	6	14	9	6	13	5	4	1	1	1	64

σ Cranial Index = 2.53 ± 0.15. σ Upper Facial Index = 3.31 ± 0.20. $r = .247 \pm .079$.

leptene crania; (2) dolichocephalic mesene and mesocephalic euryene, brachycephalic mesene and mesocephalic leptene. The first we may call cranial disharmony of the first order, and the second class may be termed cranial disharmony of the second order. The following tables show the frequency of such disharmonies in Tenerife crania.

TABLE 169. MALES. ASSOCIATION AND CORRELATION OF LENGTH-BREADTH (CRANIAL) INDEX WITH UPPER FACIAL INDEX

Upper Facial Index	Cranial Index: Dolichocephalic (x–74.9)	Mesocephalic (75–79.9)	Brachycephalic (80–x)	Total
Euryene (x–49.9)				
Number	8	24	5	37
Per cent (*a*) of class	21.62	64.86	13.51	
(*b*) of series	3.85	11.53	2.40	
Mesene (50–54.9)				
Number	35	76	10	121
Per cent (*a*) of class	28.93	62.81	8.26	
(*b*) of series	16.82	36.53	4.80	
Leptene (50–x)				
Number	11	38	1	50
Per cent (*a*) of class	22.00	76.00	2.00	
(*b*) of series	5.28	18.26	0.48	
Total				
Number	54	138	16	208
Per cent	25.96	66.35	7.68	

Let us first consider the above table from the standpoint of proportion of disharmonic crania in the total series. There are 8 dolichocephalic euryene crania, or 3.85 per cent of the total series, and one brachycephalic leptene cranium, or 0.48 per cent of the series. In all, 4.33 per cent of the series belong to the first order of disharmony. There are 24 mesocephalic euryene crania, or 11.53 per cent of the entire series; 35 dolichocephalic mesene crania, or 16.82 per cent of the series; 38 mesocephalic leptene crania, or 18.26 per cent of the series; and 10 brachycephalic mesene crania, or 4.80 per cent of the series. In all, 51.41 per cent of the series belong to the second order of disharmony. The harmonic crania are: dolichocephalic leptene 11 (5.28 per cent), mesocephalic mesene 76 (36.53 per cent), brachycephalic euryene 5 (2.40 per cent) — in all 44.21 per cent. Thus somewhat more than half of our male series are disharmonic, according to the criteria stated above. But disharmony is either of the long, narrow-head, short, broad-face variety, or of the short, broad-head, long, narrow-face variety. Obviously only the former variety can be considered in any way indicative of relation to the Cro-Magnon type. There are 67 crania, or 32.20 per cent of the series, which display the long-head, broad-face type of disharmony and 49 crania, or 23.54 per cent of the series, which display the short-head, long-face type of disharmony. But the brachycephals in the entire series are so few that it can scarcely be expected that the broad-head type of disharmony will be represented in large numbers. If we take the

mesocephalic group of crania, 138 in number, or 66.35 per cent of the series, it is found that 24 of this group, or 11.53 per cent of the entire series, show the long-head, broad-face type of disharmony, while 38, or 18.26 per cent of the whole series, show the broad-head, long-face type of disharmony. Of 16 brachycephalic crania, 11 show the broad-head, long-face type of disharmony. It is therefore evident that the one type of disharmony is relatively not much more frequent than the other, for of 54 dolichocephals 34, or 79.63 per cent, show long-head, broad-face disharmony; of 16 brachycephals 11, or 68.75 per cent, show broad-head, long-face disharmony; of the mesocephals 17.38 per cent show long-head, broad-face disharmony, and 27.53 show broad-head, long-face disharmony.

Table 169 may next be examined for the purpose of determining whether or not there is any association between the divisions of the cranial index and those of the upper facial index. A comparison of the class percentages with those of the entire series shows that the only marked positive associations are those of mesocephalic crania with leptene faces and of brachycephalic crania with euryene faces. There is a slight positive association of dolichocephalic crania with mesene faces but there is no positive association of long heads with broad faces or with narrow, long faces.

TABLE 170. Females and Doubtful. Association and Correlation of Length-Breadth (Cranial) Index with Upper Facial Index

Upper facial index	Cranial Index: Dolichocephalic (x–74.9)	Mesocephalic (75–79.9)	Brachycephalic (80–x)	
Euryene (x–49.9)				
Number	2	11	3	16
Per cent (*a*) of class	12.50	68.75	18.75	
(*b*) of series	3.12	17.18	4.68	
Mesene (50–54.9)				
Number	2	25	4	31
Per cent (*a*) of class	6.45	80.65	12.90	
(*b*) of series	3.12	39.06	6.25	
Leptene (55–x)				
Number	0	12	5	17
Per cent (*a*) of class	0	70.59	29.41	
(*b*) of series	0	18.75	7.81	
Total				
Number	4	48	12	64
Per cent	6.35	75.00	18.75	

In case of the females, the above table seems to indicate that the only significant associations are those of dolichocephalic crania with euryene faces, and those of brachycephalic crania with leptene faces. The former variety of disharmony is relatively, although not absolutely, more frequent. But the numbers of crania in the groups are too small to furnish certain indications.

TABLE 171. Males, Females, and Doubtful. Association and Correlation of Length-Breadth (Cranial) Index with Upper Facial Index

Upper facial index	Cranial Index: Dolichocephalic (x–74.9)	Mesocephalic (75–79.9)	Brachycephalic (80–x)	Total
Euryene (x–49.9)				
Number	11	35	8	54
Per cent (*a*) of class	20.75	64.81	14.81	
(*b*) of series	3.80	12.11	2.76	
Mesene (50–54.9)				
Number	38	108	16	162
Per cent (*a*) of class	23.45	66.67	9.87	
(*b*) of series	13.15	37.37	5.53	
Leptene (55–x)				
Number	13	53	7	73
Per cent (*a*) of class	17.81	72.60	9.59	
(*b*) of series	4.49	18.38	2.42	
Total				
Number	62	196	31	289
Per cent	21.43	67.82	10.72	

A glance at the table above, showing the association of divisions of the cranial index with divisions of the upper facial index for all Tenerife crania, reveals the fact that there is no strong association of these indices either in the disharmonic or in the harmonic categories.

TABLE 172. Southern California Males. Association of Length-Breadth (Cranial) Index with Upper Facial Index

Upper facial index	Cranial Index: Dolichocephalic (x–74.9)	Mesocephalic (75–79.9)	Brachycephalic (80–x)	Total
Euryene (x–49.9)				
Number	1	5	3	9
Per cent of class	11.11	55.56	33.33	
Mesene (50–54.9)				
Number	19	19	7	45
Per cent of class	42.22	42.22	15.56	
Leptene (55–x)				
Number	13	3	3	19
Per cent of class	68.42	15.79	15.79	
Total				
Number	33	27	13	73
Per cent	45.21	36.99	17.81	

Comparison with males of Southern California. Table 172 shows the association of the divisional groups of the cranial index with those of the upper facial index in a series of Indian crania from Santa Catalina, Santa Cruz, San Clemente, and San Miguel — islands off the coast of Southern California. This series is chosen for comparison with the Tenerife males because it also is a composite series including dolichocephals, brachycephals, and

the mesocephals which are possibly the result of the blend of the two primary types. Moreover it seems probable that the process of mixture in these islands was not as far advanced as in Tenerife, since a greater proportion of what appear to be more or less pure types survives in these series.

It may be observed in this table that there is a strong association of dolichocephalic crania with leptene facial indices or long and narrow faces, an almost equal association of mesocephalic crania with euryene upper facial indices, and of brachycephalic crania with euryene indices. The coefficient of correlation for this series is $-.376 \pm 0.47$. This coefficient of correlation, however, is largely due to heterogeneity of material. The crania from Santa Cruz Island show evidences of strong admixture with a brachycephalic element which is absent in the other islands. If we leave out this island with the brachycephalic element there remain 29 dolichocephalic crania of males with a mean cranial index of 71.99 ± 2.34, and a mean upper facial index of 54.17 ± 2.90. These extremely dolichocephalic crania have exclusively mesene or leptene faces, and seem very much like hypothetical "pure racial" types. Within this small group of limited range there is absolutely no correlation between cranial and upper facial indices. There is, however, a positive association of dolichocephals with leptene indices as compared with the few mesocephals of the sub-series. This may be seen from the following table.

TABLE 173. Santa Catalina, San Miguel, and San Clemente Males. Association of Length-Breadth (Cranial) Index with Upper Facial Index

Upper facial index	Cranial Index: Dolichocephals (68–74)	Cranial Index: Mesocephals (75–76)	Total
Mesene (50–54.9)			
Number	13	4	17
Per cent of class	76.47	17.65	
Leptene (55–66)			
Number	12	0	12
Per cent of class	100.00	0	
Total			
Number	25	4	29
Per cent	86.21	13.79	

I am inclined to believe that pure dolichocephal types are normally associated with both mesene and leptene upper facial indices, but rarely or never with euryene facial indices. Pure brachycephal types are probably associated normally with euryene or mesene indices, but not with leptene upper facial indices. In other words I am inclined to regard the types of disharmony which I have called "primary" (i.e. dolicho-euryene and brachy-leptene combinations) as the result of mixtures between dolichocephalic and brachycephalic pure types, or possibly the result of certain combinations of inheritance resulting from the mixture of similar types differing greatly in respect to size. This latter point, however, may be left for a later discussion.

The bearing of this comparison upon our Tenerife problem is obvious. The dolicho-euryene and brachy-leptene types in Tenerife are to be regarded as disharmonic combinations due to crossings of diverse types and by no means as characteristic " racial " features of the Guanches. These disharmonic combinations are more or less common everywhere where race mixtures have taken place between long-headed, long-faced races and short-headed, short-faced races, and may be seen on the street every day.

The coefficient of correlation of cranial index with upper facial index in 208 Tenerife male skulls is $-.031 \pm .047$. For 64 female crania this coefficient is $.247 \pm .079$. This means a total absence of correlation in the case of the male crania, and in the case of the females a small and possibly insignificant positive correlation of long heads with broad faces and of broad heads with long faces. The correlation in this female series is largely due to four crania, two of which are long with very short, broad faces, and the other two of which are brachycephalic with very long and narrow faces. For reasons already stated it seems inadvisable to lay any weight upon the correlation of indices in the female series. Nevertheless attention should be directed to the fact that throughout our investigation there seems to be a strongly marked tendency for the female crania to divide themselves into two types, whereas in the males the bulk of the series is to be found in one middle type.

It may be concluded that the cranial series of the present investigation lends no support to the view that the ancient inhabitants of Tenerife were, as a group, characterized by the association of short, broad faces with long and narrow skulls. All the possible combinations of facial proportions with length-breadth proportions of the cranial vault occur and in such numbers as suggest that combinations of facial index and cranial index, in this series at least, are due to chance.

TABLE 174. Tenerife Males. Correlation of Measurements by the Coefficient of Variation Method and by the Product Moment Method

	Coefficient of variation method	Product moment method
Length and breadth	0.560	0.586 ± 0.028
Length and basion-bregma height	0.499	0.520 ± 0.032
Breadth and height	0.242	0.304 ± 0.039
Bizygomatic and nasion-prosthion	0.485	0.491 ± 0.035

In order to save the labor of calculation involved in obtaining the coefficient of correlation by the ordinary product moment method I have utilized the short-cut method of obtaining the coefficient of correlation by the coefficient of variation method devised by Pearson.[1] The formula is as follows: $r = \frac{(V^2_a + V^2_b) - V^2_I}{2V_aV_b}$, when V_a and V_b are the coefficients of variation of two measurements and V_I is the coefficient of variation of their index.

[1] Karl Pearson and Julia Bell. A Study of the Long Bones of the English Skeleton, London, 1919, part I, The Femur, p. 192.

Table 174 compares the coefficients of correlation obtained by this short method with those calculated by the product moment method. It should be noticed that the coefficient of variation method gives somewhat lower value of r in every case.

Table 175 is a comparison of the coefficients of correlation obtained by this short method in the various island groups. The male series from Hierro and the female series from Gomera, Gran Canaria, and Hierro, have been omitted because of their numerical inadequacy.

TABLE 175. Correlation of Measurements. (Coefficient of Variation Method)

	Tenerife males	Tenerife females	Gomera males	Gran Canaria males
Length and breadth	0.560	0.277	0.303	0.611
Length and height (basion-bregma)	0.499	0.408	0.583	0.471
Breadth and height	0.242	0.004	0.077	0.524
Bizygomatic and nasion-prosthion	0.485	0.211	0.483	0.452
Nasal height and nasal breadth	0.003	0.319	0.223	0.307
External length and external breadth of palate	0.644	0.478	0.622	0.737
Basion-nasion and basion-prosthion	0.392	0.697	0.726	0.671

Some interesting contrasts in the value of the coefficient of correlation in the various series may be pointed out. The Tenerife and Gran Canaria males show high correlation of length and breadth of the skull, and the Tenerife females and Gomera males show rather low correlations between these two measurements. In correlation of length and basion-bregma height the Tenerife and Gran Canaria males again show a close similarity. In breadth and height the Tenerife females and Gomera males show practically no correlation, while the Tenerife male series yields a value of .242 and the Gran Canaria series of males .524. In the correlation of nasal height and nasal breadth moderate values are shown except in the case of the Tenerife male series, in which no correlation is evinced. By far the lowest coefficient of correlation of external length and external breadth of the palate is found in the series of Tenerife females, and, again, the Tenerife males fall considerably below the remaining groups in the correlation of basion-nasion and basion-prosthion diameters.

INHERITANCE OF MEASUREMENTS AND INDICES IN TENERIFE MALE CRANIA

Head-length, head-breadth, and length-breadth index. In order to complete the analysis of a population it is necessary not only to distinguish the various racial strains which have blended to produce it, but also to demonstrate in what proportions they have mixed and by what process of inheritance the total result has been attained. It is not enough to pick out certain types as " pure " types and to designate others more or less arbitrarily as " mixed " types. One ought to be able to show that the " mixed " types are the indubitable result of a certain combination of features inherited from the " pure " types in certain proportions, or that the " pure " types represent segregations of certain features found in the " mixed " types. It is useless to attempt any such analysis unless the sample of the population dealt with is sufficiently large so that there is a reasonable hope that it

may be fairly representative and that the various subtypes within it are distributed approximately as they would be in the entire population.

Our Tenerife series of crania seems sufficiently large to make an attempt at such analysis worth while. In this analysis the following method has been adopted. The female series and the doubtful series have been set aside and adult males only considered. In doing this it is assumed that racially the females are substantially the same as the males and that sex differences of mothers as contrasted with fathers are not transmitted to sons. The mean difference between the sexes in Tenerife for eight cranial indices is 1.20 index units. This is less than the corresponding difference between Tenerife males and the males of any other island except Gran Canaria, where the mean difference from the Tenerife indices is 1.06 units.

Let us first consider the inheritance of glabello-occipital length, maximum breadth, and the length-breadth index. Table 162 shows the correlation of length and maximum breadth of the skull in Tenerife males. Mesocephalic crania are included within the broad band extending diagonally from the upper left-hand corner to the lower right-hand corner. The frequencies are entered in ordinary type. Outside of this band in the upper right-hand portion of the table are the dolichocephals (frequencies in italics), and below them and mainly in the lower left-hand portion of the table are the brachycephals (frequencies in black face type). The means of head-length and head-breadth are enclosed by vertical and horizontal lines respectively. It is at once apparent that we may divide our series into subgroups, on the basis of divisions of the length-breadth index and size, with respect to the means of length of the entire group. Thus we have: (1) small dolichocephals, including all crania with length-breadth indices below 75, lengths below 186, and breadths under 142; (2) large dolichocephals with length-breadth indices below 75 and lengths 186 or more; (3) small mesocephals with indices between 75 and 79.9 and lengths less than 186; (4) large mesocephals with the same index range and lengths of 186 and more; (5) small brachycephals with indices 80 or above and lengths less than 186; (6) large brachycephals with indices 80 or above and lengths 186 or more. The following table gives the means of length and breadth for each of these subgroups.

TABLE 176. Means of Glabello-Occipital Length and Maximum Breadth of Subgroups of Tenerife Males Classified with Respect to the Mean of Length of the Series

	Small Dolicho.	Large Dolicho.	All Dolicho.	Small Meso.	Large Meso.	All Meso.	Small Brachy.	Large Brachy.	All Brachy.
Glabello-occipital length	182.12	190.44	188.22	181.26	189.83	185.31	180.64	189.67	182.18
Breadth, maximum	134.65	140.00	138.56	139.78	146.33	142.87	146.58	151.67	147.53
Number.....	17	46	63	87	78	165	14	3	17

The relationship of the various subgroups is not apparent from this table but is manifested in Fig. 28. Here it is to be noted that the small mesocephals have almost exactly the length of the small dolichocephals, or of the small brachycephals, combined with the

breadth of the large dolichocephals. The large mesocephals have the length of the large dolichocephals combined with the breadth of the small brachycephals. The large brachycephals, only three in number, have the length of the large dolichocephals combined with a breadth considerably in excess of the means of the brachycephalic group. These coinci-

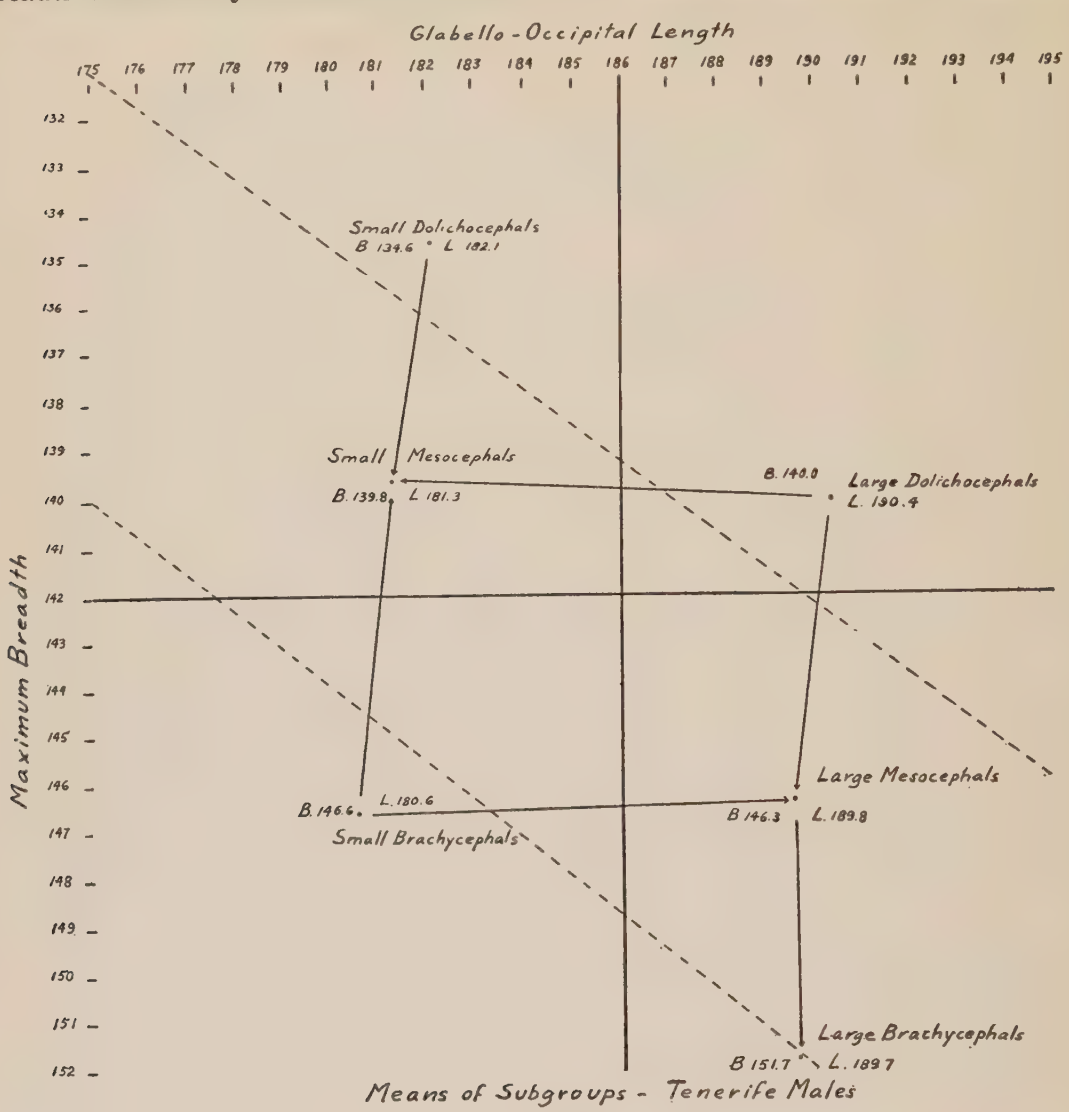

Glabello-Occipital Length
175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195
Maximum Breadth
132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152
Small Dolichocephals
B 134.6 L 182.1
Small Mesocephals
B. 139.8 L 181.3
B. 140.0
Large Dolichocephals
L. 190.4
Large Mesocephals
B. 146.6 L. 180.6
Small Brachycephals
B 146.3 L. 189.8
Large Brachycephals
B 151.7 L. 189.7
Means of Subgroups - Tenerife Males

FIG. 28

dences in means are not approximate: they are exact — in almost every instance they differ by less than a millimeter.

The interpretation of these facts seems simple and very obvious. The small mesocephals and the large mesocephals are the results of blends between three or possibly four primary types. The small mesocephals inherit the small head-length of the small dolichocephals and the medium head-breadth of the large dolichocephals. The large mesocephals inherit

the head-length of the large dolichocephals and the head-breadth of the brachycephals. Head-length and head-breadth are inherited independently, and mesocephals may result equally from the cross of dolichocephals with brachycephals or from the cross of large dolichocephals and small dolichocephals. Theoretically mesocephals could result also from a cross between large brachycephals and small brachycephals.

It may be objected that data incapable of genetic analysis are used, since there is no information as to the family relationships of the crania under discussion. The conclusion that head-length and head-breadth seem to be inherited separately and alternately follows particularly from an examination and analysis of many of the families tabulated by Frets in his " Heredity of Head-Form in Man." [1] Although the author himself does not mention this fact — and it seems very strange that it should have escaped him — the proof of it is abundantly illustrated in his raw data on families. Having reached the conclusion that *a priori* it is extremely probable that many of the mesocephals of our Tenerife series are due to crosses between large and small dolichocephals, verification was attempted from the family data presented by Frets. Unfortunately the Dutch families studied by Frets are predominantly mesocephalic and brachycephalic, and there are listed practically no families with adult children, both of whose parents are frankly dolichocephalic. For the general subject of the inheritance of these two cranial dimensions and of their index the following family is instructive.[2]

292b	Father	Mother	Sons					Daughters			Ages
			(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	Sons: 35, 28, 25, 20, 19
L.	205	186	204	193	187	190	192	188	184	185	Daughters: 32, 29, 20
B.	147	143	152	150	152	151	145	143	148	143	
Ind.	71.5	76.9	74.5	78.0	81.5	79.7	75.8	75.8	80.1	77.3	

In this family the father is a large dolichocephal and the mother a medium subdolichocephal. The first son inherits the head-length of the father and a breadth greater than that of either parent but is dolichocephalic. The second son has a head-length nearer the mother's than the father's but intermediate between the two. He is mesocephalic. The third son inherits the head-length of the mother and a head-breadth in excess of either parent and is subbrachycephalic. The fourth son shows head-length a little more than that of the mother, and an excess of head-breadth over either parent. The three daughters tend to inherit approximately the head-length of their mother. Two of them have her exact head-breadth, and the head-breadth of the other is one millimeter more than that of the father. Allowing for individual variation, it is evident that the children tend to inherit the head-length either of the father or of the mother. The head-breadths also seem to be inherited alternately, but there is a decided tendency for the head-breadth of the offspring to exceed that of either parent. From these two parents, the one excessively dolichocephalic and the other subdolichocephalic, we have three dolichocephalic children, three mesocephalic children, and two who are subbrachycephalic.

[1] G. P. Frets, Heredity of Headform in Man, the Hague, 1921.

[2] Frets, op. cit., Table XI.

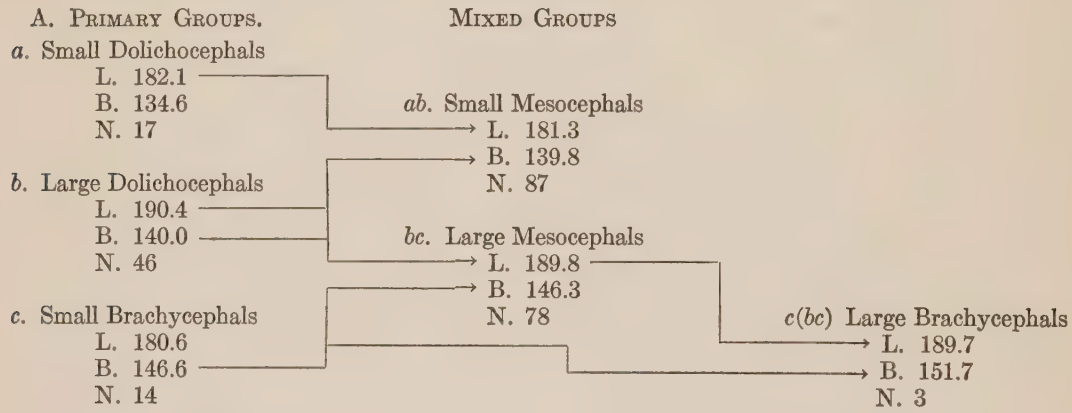
The following table — taken from Frets's Table 13 — gives the number of children born to parents one of whom is macrodolichocephalic and the other microdolichocephalic, and the index groupings of such children.

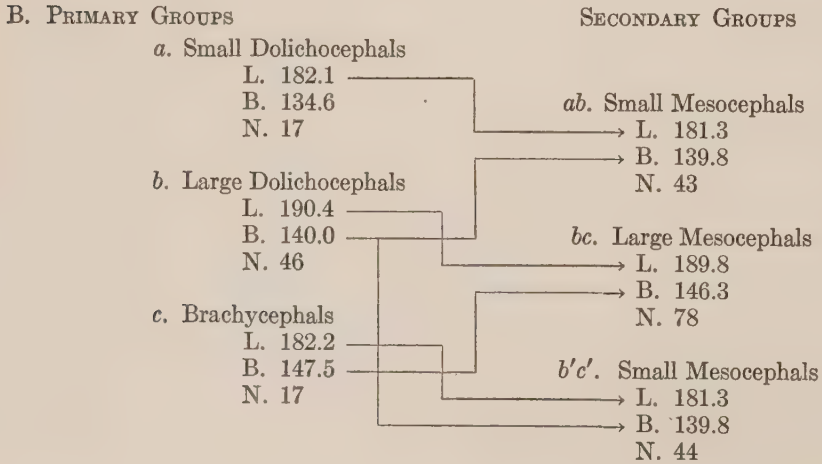
TABLE 177. Cephalic Indices of Children of Dolichocephalic Parents (Frets)
(Macrodolichocephalic, Microdolichocephalic, and the reverse)

	70–77	78–81	82–86
Number	24	62	21
Per cent	22.43	57.94	19.62

It is apparent that of 107 children of Dutch parents who were dolichocephals of markedly different size, about one-fifth were dolichocephals, one-fifth brachycephals, and three-fifths mesocephals. Since, however, Frets classifies as dolichocephalic all subjects with indices below 81, and since the mean of the dolichocephalic parents is 77.72, it is evident that many mesocephals are included in the parental group. Nevertheless it is demonstrated that small and large dolichocephals in crossing are more likely to produce mesocephals than dolichocephals and that they may even produce brachycephals.

Reverting to the Tenerife population we may express its composition tentatively by one of the following schemes:





Before concluding as to the relative merits of these schemes let us consider for a moment the numbers of the subgroups.

TABLE 178. Tenerife Males. Actual Frequencies and Percentages of Length-Breadth Index

	Primary Groups			Secondary Groups	
	Small Dolicho	Large Dolicho	Brachy	Small Meso	Large Meso
Number	17	46	17	87	78
Per cent of group	21.2	57.5	21.2	52.7	47.3
Per cent of series	6.9	18.7	6.9	35.5	31.8

With a very slight modification we have the following:

TABLE 179. Tenerife Males. Theoretical Frequencies and Percentages of Length-Breadth Index

	Primary Groups			Secondary Groups	
	Small Dolicho	Large Dolicho	Brachy	Small Meso	Large Meso
Number	20	40	20	80	80
Per cent of group	25.0	50.0	25.0	50.0	50.0
Per cent of series	8.33	16.67	8.33	33.33	33.33

Thus in regard to the length-breadth index the composition of our Tenerife male population is as follows: approximately two-thirds mixed mesocephals, of which half are large and half are small, one-third "pure types" comprising one-half large dolichocephals, one-fourth small dolichocephals, and one-fourth brachycephals. In the mixed forms there is an apparent tendency for medium head-breadth to be dominant over narrow head-breadth, and for broad head-breadth to be dominant over medium head-breadth. It is evident that, if our original population consisted of small and large dolichocephals and brachycephals, there must have been a very small minority of the latter; for the tendency of large head-breadth to dominate over smaller breadths would probably in a few generations produce a very strong preponderance of brachycephals and large mesocephals. It is very probable also that stature tends to increase with mixtures and to bring about a corresponding lengthening of the head, so that there would be a tendency to gradual increase of head-length in mixed types, producing mesocephaly in conjunction with the dominance of the large head-breadth.

Although it is perfectly possible to produce brachycephals by crossing small and large dolichocephals, so that the breadth of the large and the length of the small is inherited, it does not seem possible that our Tenerife brachycephals could have arisen from such crosses; for only one or two of the large dolichocephals have head-breadths as large as the narrowest brachycephal.

Inability to work out the proportions of the original elements in the Tenerife population, and to apply a scheme of inheritance which would produce the present population must be admitted. It seems, however, that approximately the following process must have taken place: The dominant element in Tenerife numerically consisted of large dolichoceph-

TABLE 180. TENERIFE MALES. CORRELATION OF GLABELLO-OCCIPITAL LENGTH AND BASION-BREGMA HEIGHT

Basion-bregma	Glabello-Occipital																											
	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	
119	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
120	..	..	*1*	*1*	..	..	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
121	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
122	..	..	..	..	..	*1*	..	..	*2*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
123	..	..	..	..	..	..	..	..	..	..	*1*	..	*1*	..	..	..	..	..	..	*1*	..	..	..	..	..	..	..	..	..	3
124	..	..	..	..	1	..	..	..	..	*1*	..	..	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
125	..	..	..	1	1	2	*2*	..	..	*1*	..	*1*	..	..	*1*	..	..	..	*1*	..	..	..	..	..	..	..	..	..	..	10
126	..	..	..	..	1	2	..	..	..	..	..	*1*	*2*	..	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	7
127	1	..	..	..	..	..	..	2	1	*2*	..	..	..	*1*	*2*	*2*	..	..	..	..	..	..	..	..	..	..	..	..	..	11
128	..	..	..	..	..	1	1	1	1	2	*1*	..	*3*	*1*	..	*1*	..	..	..	..	..	..	..	..	..	..	..	..	..	12
129	..	..	..	..	..	..	1	1	1	4	1	1	*4*	*2*	..	..	*2*	*1*	..	..	*1*	..	*1*	..	..	..	..	..	..	20
130	..	..	..	..	..	2	3	3	2	..	2	..	1	*3*	*1*	*1*	*2*	*2*	*1*	..	..	..	..	..	..	..	..	..	..	23
131	..	..	..	..	..	1	1	1	1	1	1	..	2	1	1	*1*	..	*1*	*1*	..	..	..	..	..	..	..	*1*	..	..	14
132	..	..	..	..	..	2	..	..	1	..	..	..	1	3	2	3	2	..	..	*1*	..	..	*1*	..	..	..	..	..	..	16
133	..	..	..	..	..	..	..	..	1	..	..	3	2	3	..	3	1	2	..	*1*	..	*1*	*1*	..	..	*1*	..	..	19
134	..	..	..	..	..	1	1	1	2	1	..	..	2	1	..	3	..	3	..	..	*2*	..	*1*	*1*	..	..	..	..	..	19
135	..	..	..	..	..	..	..	2	1	..	1	3	1	1	3	..	1	1	..	1	*1*	*2*	*1*	..	..	..	..	..	..	19
136	..	..	..	..	..	..	1	2	1	..	1	..	2	1	1	3	..	2	..	2	1	..	*1*	*1*	..	..	..	..	..	19
137	..	..	..	..	..	..	..	..	1	..	1	1	..	3	1	..	1	..	..	..	..	1	2	..	..	..	..	..	..	11
138	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	2	2	..	..	..	3	..	..	..	..	..	..	..	..	10
139	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	3
140	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	1	6
141	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1
142	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
143	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	2
144	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
145	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
146	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
147	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
148	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
149	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	2
	1	1	1	2	3	12	10	14	15	12	9	11	24	22	12	20	13	12	7	7	8	4	9	3	1	3	1	1	238

$r = .520 \pm .032$

als. The secondary element in numbers consisted of small dolichocephals, such as seem to have been the most important element in Hierro. These small dolichocephals were joined with a very small brachycephalic element such as is found most commonly in Gomera. The fusion of these two small elements gradually produced an increasing number of small mesocephals and brachycephals, at the expense of the small dolichocephals. These two elements and the mixed type resulting from their fusion probably constituted the common people and subordinate classes in Tenerife. The large dolichocephals mixed with them very slowly. The result of such mixture was to increase further the proportions of small mesocephals, and to create a new type of large mesocephals. This mixture was at the ex-

pense of all three original types. Because of the great head-length of the numerically predominant dolichocephals, the increase of broad-headedness tended to produce a majority

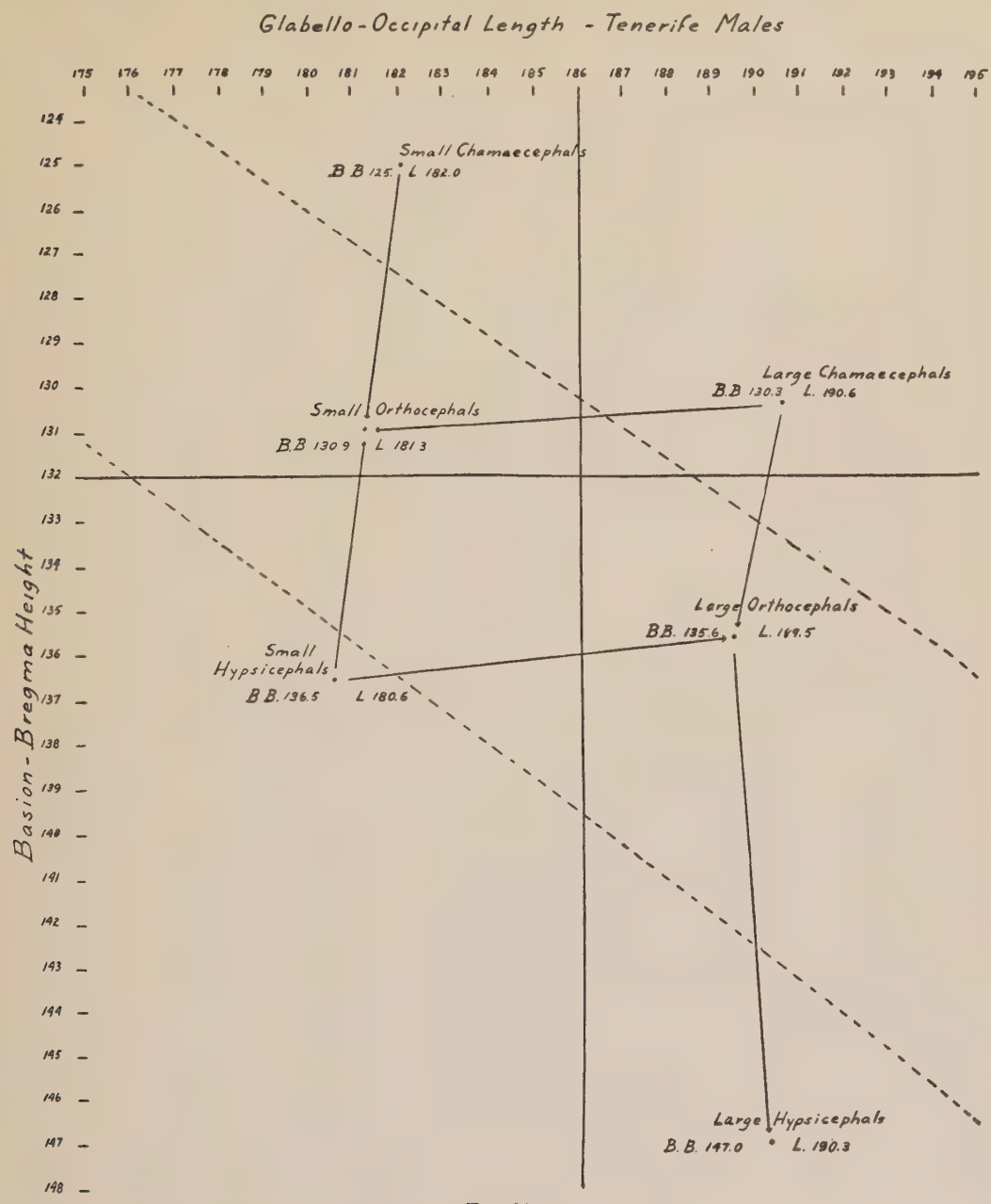


FIG. 29

of large mesocephals rather than brachycephals. It is also probable that the large dolichocephals intermarried with the small types much less readily than these did with each other. If the inhabitants of Tenerife had been left to their own genetic devices for a few more centuries they would probably have consisted of a majority of large mesocephals, a

large secondary element of small mesocephals, a considerable number of brachycephals, and a very few of the old large dolichocephals. The small dolichocephals would have been entirely absorbed. The few large dolichocephals would have owed their survival to class endogamy.

There is little doubt that our Tenerife population was undergoing a gradual brachycephalization such as has occurred extensively in many parts of Europe. Here, however, the brachycephalic element was very small and received no migrational increment.

Height and length-height index. The inheritance of height in the Tenerife male series may be studied by means of the correlation table of glabello-occipital length and basion-bregma height, and again in the correlation table of breadth and height (Tables 180, 182). Turning first to the length-height correlation table, it may be seen that the crania naturally fall into groups the mean measurements of which are tabulated below:

TABLE 181. TENERIFE MALES. MEAN HEIGHTS AND LENGTHS OF SUBGROUPS ON THE BASIS OF LENGTH

	Small Chamae	Large Chamae	Small Ortho	Large Ortho	Small Hypsi	Large Hypsi	All Hypsi
Glabello-occipital length.....	182.03	190.63	181.26	189.50	180.6	190.3	183.00
Basion-bregma height.....	125.00	130.31	130.88	135.59	136.5	147.0	138.92
Number.....	27	49	78	70	10	3	13

Here again it is clear that the small orthocephals have inherited the mean head-length of the small chamaecephals or of the small hypsicephals, together with the moderate basion-bregma height of the large chamaecephals. The large orthocephals have the length of the large chamaecephals and the height of the small hypsicephals. The small hypsicephals have approximately the height of the large orthocephals and the length of the small chamaecephals. There remains a small isolated group of large hypsicephals, three in number, with the length of the large chamaecephals and a height exceeding that of any other group. Substantially the same condition obtains as in the case of length-and-breadth inheritance. The basion-bregma height appears to be subject to alternate inheritance, precisely like the glabello-occipital length and the maximum breadth. The relationship is again shown by Figure 29. The hypsicephals are, with one exception, mesocephalic. We may assume that they represent a secondary or derived type, in which the short length of small chamaecephals or small brachycephals is combined with basion-bregma height derived from a cross with large orthocephals. It seems fairly clear that our original classes are small chamaecephals, large chamaecephals, and large orthocephals. The large orthocephals may themselves be derived from a blend with some hypsicephalic type, but this type does not occur in its purity in Tenerife except, perhaps, in skull No. 428, which is dolicho-hypsicephalic.

Height and breadth-height index. In the study of the breadth-height index, the correlation table of basion-bregma height and maximum breadth (Table 182) is utilized. The subgroups are divided by the means of the series. Thus we have narrow tapeinocephals

with breadths up to and including 142 mm., and large tapeinocephals with breadths 143 mm. or more. Similarly there are small and large metriocephals, small akrocephals, and two large akrocephals in an isolated position. The following table shows the means and numbers of these subgroups.

TABLE 181 A. TENERIFE MALES. MEANS OF SUBGROUPS CLASSIFIED ON THE BASIS OF MAXIMUM BREADTH

	Small Tapeino	Large Tapeino	Small Metrio	Large Metrio	Small Akro	Large Akro	All Akro
Breadth	139.26	147.25	138.63	145.08	136.00	150.50	137.42
Height	125.48	130.80	131.71	136.20	136.29	149.00	137.63
Number	27	65	89	39	17	2	19

TABLE 182. TENERIFE MALES. CORRELATION OF MAXIMUM BREADTH AND BASION-BREGMA HEIGHT

Basion-bregma height	Maximum Breadth																									
	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	
119	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
120	..	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3
121	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
122	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3
123	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	3
124	..	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	3
125	1	..	..	..	..	1	1	1	1	1	2	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	10
126	..	..	1	..	..	1	..	1	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	6
127	..	..	..	..	..	1	1	1	..	..	2	1	2	..	1	..	1	1	..	..	..	..	..	..	..	..	11
128	..	..	..	1	..	..	1	1	1	2	..	..	1	1	1	1	1	1	..	..	..	..	..	..	..	..	12
129	..	..	..	..	2	..	..	2	1	4	2	1	..	1	1	3	1	..	1	1	..	..	..	..	1	..	21
130	1	..	..	..	..	2	1	2	2	1	3	2	4	3	..	..	..	1	..	..	..	..	1	..	..	..	23
131	..	..	..	..	..	1	1	1	..	..	2	1	2	..	..	1	2	1	..	..	..	..	..	..	..	1	13
132	..	..	..	..	..	..	1	..	..	3	..	..	1	3	1	3	..	1	1	1	..	..	..	1	..	..	16
133	..	..	..	..	..	..	3	1	1	1	2	2	1	2	1	2	..	1	..	..	2	..	..	..	..	..	19
134	..	..	..	1	1	1	1	2	2	1	..	1	2	1	2	2	..	..	1	..	1	..	..	..	..	..	19
135	..	..	..	..	..	..	1	..	2	..	..	..	3	1	2	2	2	1	4	1	..	..	..	..	..	..	19
136	..	1	..	..	1	..	1	..	..	..	4	1	1	..	1	2	1	1	..	2	1	..	1	..	1	..	19
137	..	..	..	..	..	..	..	1	..	1	1	2	2	..	..	1	2	..	1	..	..	..	..	..	..	..	11
138	..	..	..	..	..	..	..	1	..	1	..	..	2	..	4	..	..	1	1	..	..	..	..	..	..	..	10
139	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	4
140	..	..	..	..	..	1	..	..	..	1	..	..	..	2	..	..	..	..	..	1	1	..	..	..	..	..	6
141	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
142	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
143	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2
144	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
145	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
146	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
147	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
148	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
149	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2
	2	1	1	2	5	9	14	16	10	17	19	13	23	16	17	18	11	9	11	7	6	2	3	1	2	3	238

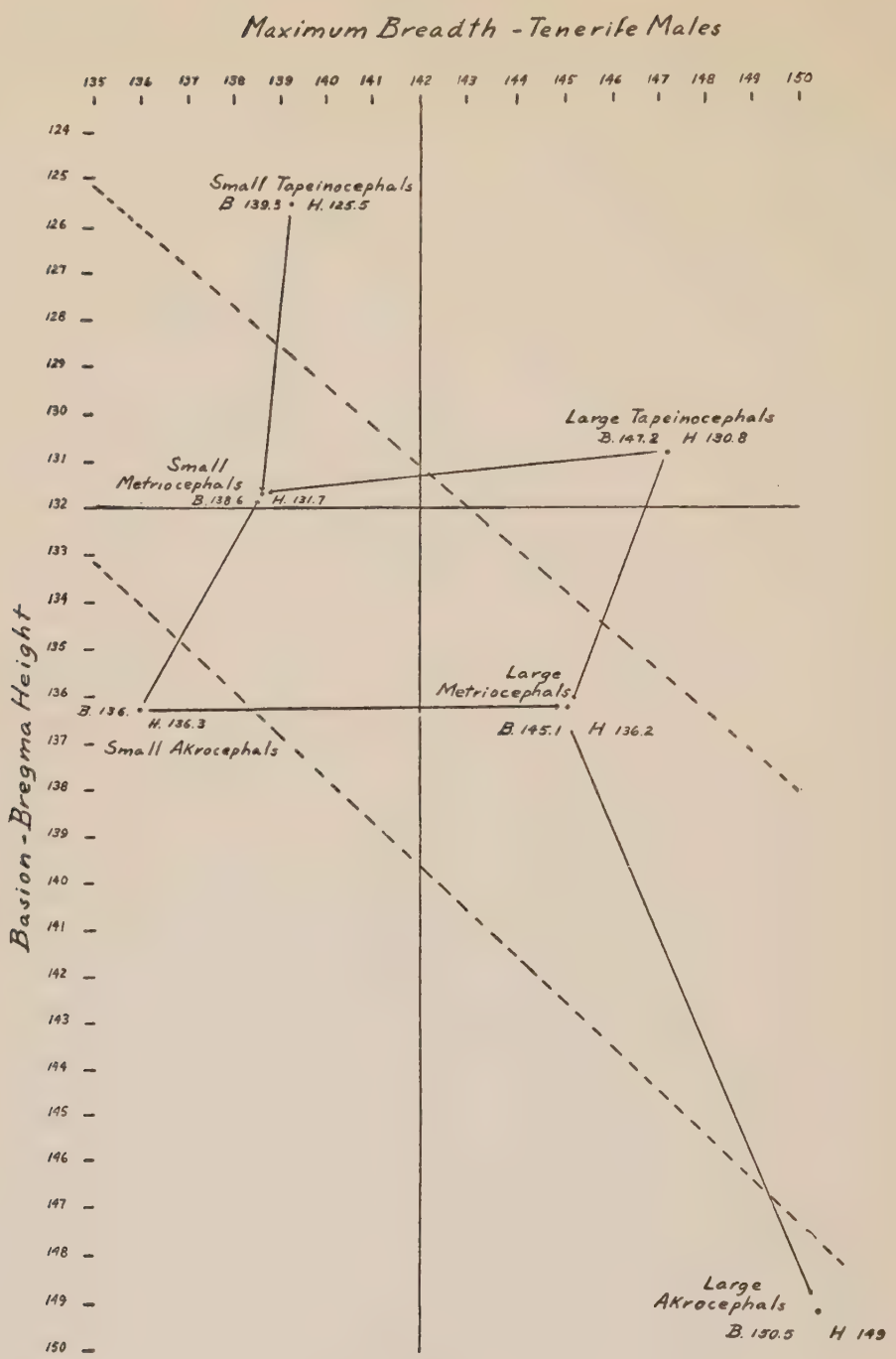


FIG. 30

Apparently the three primary groups here are small tapeinocephals, large tapeinocephals, and small akrocephals. The small metriocephals have approximately the breadth of the small tapeinocephals and the height of the large tapeinocephals. The large metrio-

TABLE 183. TENERIFE MALES. CORRELATION OF UPPER FACIAL HEIGHT AND UPPER FACIAL BREADTH

Bizygomatic diameter	Nasion-Alveon																												
	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	
119	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
120	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	3
121	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
122	..	..	..	..	..	..	1	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
123	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3
124	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	3
125	..	..	..	..	..	..	1	..	..	..	1	3	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	7
126	..	..	..	..	1	1	1	..	..	1	1	..	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	10
127	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	3	..	2	..	1	..	..	..	..	..	..	..	..	..	8
128	..	..	..	..	1	..	..	..	..	1	2	..	2	1	..	..	1	1	2	..	..	..	..	..	..	..	..	..	..	11
129	..	..	..	1	..	..	..	..	..	1	1	..	3	..	1	1	..	..	..	1	..	..	..	..	..	1	..	..	..	10
130	..	..	..	..	..	1	..	..	1	..	1	2	2	1	..	4	..	4	..	1	..	1	..	..	..	..	..	..	..	18
131	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	2	1	2	1	..	..	1	..	..	..	..	..	..	10
132	..	..	1	..	..	..	..	..	..	1	2	..	3	2	2	2	3	2	2	1	..	..	..	..	..	..	..	..	..	21
133	..	..	..	..	..	..	..	1	..	..	1	1	..	1	..	4	..	2	1	1	1	1	1	..	..	..	..	..	..	15
134	..	..	..	..	..	..	..	..	..	..	2	1	..	2	..	5	..	..	1	..	1	..	1	..	..	1	..	..	..	14
135	..	..	..	..	..	..	..	1	..	..	..	..	1	2	1	1	1	..	2	3	..	1	..	..	..	..	..	..	..	13
136	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	4	..	..	..	2	..	1	..	..	..	..	..	..	..	10
137	..	..	..	..	..	..	..	..	..	..	1	2	1	1	..	2	2	..	3	2	1	1	1	..	..	..	..	..	..	17
138	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	1	..	1	..	..	..	..	..	..	..	..	1	..	..	6
139	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	3	1	..	..	..	..	..	..	..	..	..	..	..	6
140	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	..	1	1	..	..	..	..	..	..	6
141	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	3
142	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	2
143	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	3
144	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2
145	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	2
146	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	2
	1	0	1	1	2	2	4	4	3	6	15	11	16	18	7	36	14	15	16	16	4	7	6	1	0	3	1	0	1	211

cephals have the exact height of the small akrocephals and a breadth approximating that of the large tapeinocephals. The two isolated large akrocephals are sports.

The tapeinocephals include almost all of the brachycephals in the series, and but two dolichocephals. The small akrocephals are almost all dolichocephals. When we consider the distributions somewhat more closely it is clear that dolichocephaly is incompatible with tapeinocephaly in this series, and brachycephaly with akrocephaly. Furthermore the akrocephals of this series are with one exception orthocephalic, and this exceptional skull is hypsicephalic. These considerations impel one to the conclusion that many of the tapeinocephals in the series are of derived origin, since tapeinocephaly is associated here predominantly with mesocephaly and brachycephaly. It seems probable that there is a tendency for small basion-bregma height to be dominant over larger basion-bregma height in

conjunction with a dominance of large breadth over smaller breadths. It is quite possible that the one dolicho-hypsi-akrocephalic skull in our series is the sole survivor of a previous racial element which has been reduced to dolicho-metrio-akrocephaly, and then to meso-ortho-tapeinocephaly through a process of intermixture.

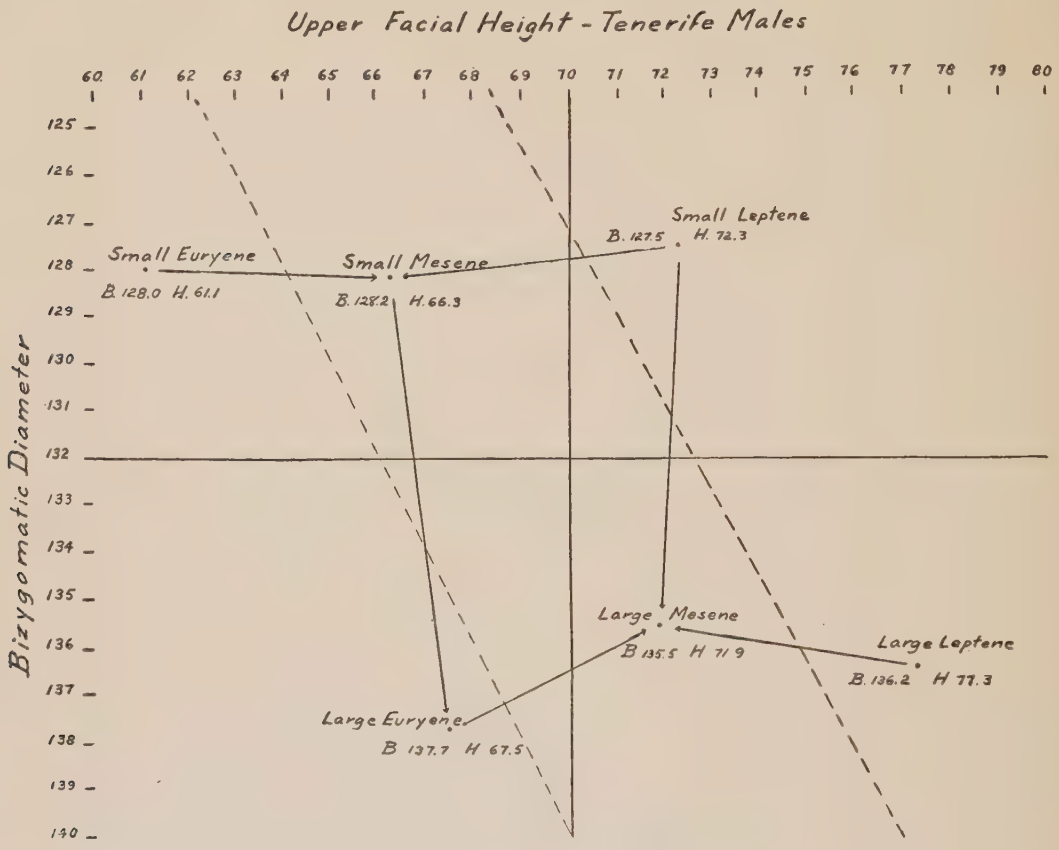


FIG. 31

Bizygomatic diameter, nasion-alveon height, and upper facial index. For the study of the upper facial index the series has been divided into six subgroups on the basis of the mean of the bizygomatic diameter and the three divisions of the upper facial index. Thus we have narrow and broad leptenes, narrow and broad mesenes, and narrow and broad euryenes. The following are the means of these subgroups.

TABLE 184. TENERIFE MALES. MEANS OF SUBGROUPS ON THE BASIS OF BIZYGOMATIC DIAMETER

	Small Leptene	Large Leptene	Small Mesene	Large Mesene	Small Euryene	Large Euryene
Nasion-alveon height.....	72.30	77.26	66.33	71.9	61.07	67.5
Bizygomatic diameter.....	127.48	136.20	128.20	135.5	128.0	137.7
Number.....	33	15	51	68	16	28

In this table it appears that the small euryene and small mesene have identical bizygomatic diameters, and the small leptene group shows a mean within one millimeter of their values. The large leptene and large mesene group, again, have practically identical bizygomatic means. The mean bizygomatic diameter of the large euryene group shows an excess of 1.5 mm. over that of the large leptene group.

The small mesene and large euryene groups have almost identical nasion-alveon heights, as have also the small leptene and large mesene groups. I should then classify as primary groups the small leptene, large leptene, and small euryene groups. The process of alternate inheritance of facial dimensions with individual variations about the parental means seems to be repeated here. A tendency for medium facial height to dominate over small and large facial height seems manifested. A slight tendency for the large bizygomatic diameters to prevail over the smaller is also noticeable.

Summary. In the foregoing study of the inheritance of measurements and indices the subgroups have been distinguished on the basis of size and the conventional divisions of the various indices. It has been shown that size is extremely important in inheritance, especially in mixed groups in which there is a marked disparity in this respect between the primary elements involved in the cross. When large dolichocephals are crossed with small dolichocephals, the indices of the offspring are likely to diverge from those of both parent stocks, even when both show approximately the same values of indices; for the cranial dimensions rather than the indices are inherited. There is considerable evidence in favor of regarding the cranial dimensions as separate unit characters, although there is probably a certain amount of individual variation, non-heritable or heritable in character, which tends to complicate genetic analysis.

In recent craniometric work there has often been shown a tendency for investigators to abandon the conventional methods of subdividing indices into small, medium, and large categories, and to deal almost exclusively with means and certain statistical constants. This is probably due to the fact that many anthropologists feel that the conventional divisions of cranial indices are purely arbitrary and do not correspond to any biological types. I do not entertain any belief that conventional index subdivisions necessarily imply profound morphological similarities within themselves, or radical differences of a morphological nature, when two index subdivisions are contrasted one with another. Naturally there is no inevitable morphological or genetic difference between a skull with a length-breadth index of 74.9 and another with a length-breadth index of 75. Nevertheless, when the craniometric features of a population are studied, one is driven to utilize these subdivisions of indices as a convenient method of splitting up his material into subgroups for closer analysis. The fatuous assumption that any particular group of crania derived from the same area is a racially homogeneous group, and that all variations within the group are individual in origin, has vitiated more craniometric work than has the assump-

tion that such terms as " dolichocephalic," " mesocephalic," and " brachycephalic " connote eternal biological verities. We may as well recognize the fact that all anthropometric material now available for study is racially more or less mixed material, and must be analyzed and sifted and divided into subgroups, if we are to make any serious attempt to determine its origins. Undoubtedly morphological features of a non-measurable character are profoundly significant from a racial standpoint, and are perhaps more important than are raw dimensions and the ratios of such dimensions to each other. In this work a serious effort has been made to grade such morphological characters and to establish types on the basis of such gradation. But not only is it impossible to maintain a perfectly consistent standard of gradation so that different groups observed by different authors are morphologically comparable, but the statistical treatment of such morphological observations is so arduous and so unsatisfactory, in spite of the marvellous contributions to such methods made by Pearson and his school, that it cannot be utilized as a satisfactory substitute for the mathematical analysis of caliper measurements and indices derived therefrom. Furthermore, it is clear that morphological features tend to be inherited in smaller units than do raw dimensions. Elsewhere in this monograph an attempt has been made to establish morphological types on the basis of observed features, plotting an individual curve of variation for a large number of observations on each skull. This attempt was perforce abandoned because no two skulls in the entire series were alike.

An index may be a crude and arbitrary ratio, but if it is properly used in conjunction with a due study of the absolute values of its component measurements and their respective variabilities it is one of the most useful tools of the anthropologist. While the subdivisions of indices are probably inexact there is little doubt that the extremes of the classifications usually represent racially different types and are correlated with differences in morphological features which are immensurable.

While it cannot be said that the following conclusions have been demonstrated as facts, they have been established as the most reasonable probabilities.

(1) The mesocephals of the Tenerife population have been derived from the intermixtures of small dolichocephals, small brachycephals, and large dolichocephals. There appears to be a tendency for large skull-breadths to be dominant over small skull-breadths. The largest element in the population originally was the dolichocephalic subgroup. The brachycephals constituted only a very small proportion.

(2) The original population was made up of small and large chamaecephals and large orthocephals. The hypsicephals in this group are probably of derived origin since they are mesocephalic. However, they may represent a reversion to a hypsicephalic element which blended to produce the large orthocephals somewhere outside of the Tenerife area. There is a bare possibility that the single dolicho-hypsicephalic cranium of the series is the sole survivor of a primary element which has almost disappeared through mixture.

(3) Originally the population was composed largely of small tapeinocephals, large tapei-

TABLE 185. Index Combinations. Tenerife Males

Dolichocephals ..	63 25.7 %	Dolicho-Chamae ..	21	Dolicho-Chamae-Tapeino ...	2	Euryene ...	0	
						Mesene....	2	
						Leptene....	0	
				Dolicho-Chamae-Metrio	17	Euryene ...	2	
						Mesene....	7	
						Leptene....	4	
				Dolicho-Chamae-Akro.....	0			
		Dolicho-Ortho....	39	Dolicho-Ortho-Tapeino	0			
				Dolicho-Ortho-Metrio	26	Euryene ...	3	
						Mesene....	12	
						Leptene....	5	
				Dolicho-Ortho-Akro.....	14	Euryene ...	2	
						Mesene....	8	
						Leptene....	2	
		Dolicho-Hypsi....	1	Dolicho-Hypsi-Tapeino	0			
				Dolicho-Hypsi-Ortho.....	0			
				Dolicho-Hypsi-Akro.....	1	.....	?	
Mesocephals	165 67.3 %	Meso-Chamae....	52	Meso-Chamae-Tapeino	47	Euryene ...	4	
						Mesene....	27	
						Leptene....	8	
				Meso-Chamae-Metrio	4	Euryene ...	0	
						Mesene....	1	
						Leptene....	2	
				Meso-Chamae-Akro.....	0			
		Meso-Ortho.....	92	Meso-Ortho-Tapeino	24	Euryene ...	5	
						Mesene....	9	
						Leptene....	7	
				Meso-Ortho-Metrio	68	Euryene ...	13	
						Mesene....	29	
						Leptene....	14	
				Meso-Ortho-Akro.....	0			
		Meso-Hypsi.....	13	Meso-Hypsi-Tapeino.....	2	Euryene ...	0	
						Mesene....	1	
						Leptene....	1	
				Meso-Hypsi-Metrio	7	Euryene ...	0	
						Mesene....	5	
						Leptene....	2	
				Meso-Hypsi-Akro.....	4	Euryene ...	1	
						Mesene....	0	
						Leptene....	3	
Brachycephals ..	17 6.9 %	Brachy-Chamae ..	4	Brachy-Chamae-Tapeino....	4	Euryene ...	1	
						Mesene....	2	
						Leptene....	0	
				Brachy-Chamae-Metrio.....	0			
				Brachy-Chamae-Akro	0			
		Brachy-Ortho	12	Brachy-Ortho-Tapeino.....	10	Euryene ...	3	
						Mesene....	6	
						Leptene....	1	
				Brachy-Ortho-Metrio.....	2	Euryene ...	1	
						Mesene....	1	
						Leptene....	0	
				Brachy-Ortho-Akro	0			
Total.....	245		234		232		194	

nocephals, and akrocephals. Many of the large tapeinocephals are of secondary origin. The tapeinocephals were probably mostly brachycephalic and the original dolichocephals were largely akrocephalic and metriocephalic. In Tenerife metriocephaly was partly established in the original population before it was reinforced by mixture. It is by no means certain that metriocephaly is invariably due to mixtures of tapeinocephals and akrocephals. The tendency for large breadths to dominate seems to be associated with a tendency toward the dominance of small heights.

(4) Small and large leptene types, and small euryene types seem to have been the original elements contributing to the Tenerife mixture. Large bizygomatic breadths tend to dominate over the smaller breadths, and medium upper facial heights tend to survive at the expense of both large and small heights. Mesene types may in some cases be primary.

(5) These various index subgroups probably do not appear for the most part in their original combinations. Probably the Tenerife population when it began to intermingle consisted of the following groups: (*a*) small dolichocephals, chamaecephalic, metriocephalic, and either mesene or leptene; (*b*) large dolichocephals, some orthocephalic, and some perhaps hypsicephalic, metriocephalic or akrocephalic, generally leptene; (*c*) small brachycephals, usually chamaecephalic and tapeinocephalic, with perhaps a few orthocephals, but all euryene.

Table 185 shows the combinations of length-breadth, length-height, breadth-height, and upper facial index divisions for all Tenerife males.

CHAPTER XI

CONCLUSIONS

DISCUSSION OF CONCLUSIONS OF PREVIOUS WRITERS

BEFORE stating the conclusions to which this study has led, it may be well to summarize the opinions of the most important investigators who have dealt with the ethnological affinities of the ancient inhabitants of the Canary Islands. Berthelot,[1] on the basis mainly of linguistic evidence, thought that the population of the Canaries was derived from the tribes of the western Atlas region. Faidherbe considered these people to be a mixture of Libyans, blond Europeans, Wolof Negroes, and Canaanites.[2]

Verneau, Meyer and Von Luschan, Sergi. On the basis of his extended investigations the conclusion of Professor René Verneau deserves the most careful consideration. That distinguished authority dismisses first of all the hypothesis that the Guanches are the remnant of the population of the fabled continent of Atlantis. Geological evidence indicates that the Canary Islands are not the unsubmerged portions of a sunken continent, but a group of volcanic islands of Tertiary origin, separated from the mainland by such depths as to preclude also the possibility of any recent land connection with the African mainland.[3] Nor is there any question of these islands' having been peopled from America, since the ocean currents flow in a westerly direction. All of this is incontrovertible.

Verneau recognized the presence of " Semites " in the Canary Islands before the conquest. For him the term " Semite " seems to connote a racial type, whereas for us it is applicable only to language. The people who speak or have spoken Semitic languages belong to many diverse physical types. Verneau's " Semites " were found by him in large numbers in the southeastern part of the island of Gran Canaria. He thinks that the first invaders of the " Semitic type " came from the Mediterranean littoral when Carthage was in her glory. He offers as plausible the hypothesis that Numidians, coming from the region of Carthage and mingling with Semites of the dominant race, furnished a portion of the population of the islands. Inscriptions probably Numidian have been found in Hierro and in Gran Canaria. While this theory is not at all impossible, there is no evidence in its favor from the anthropological standpoint. No one can question seriously the fact that Arabs found their way to the archipelago long before the European conquest; and it is altogether probable that the islands were also visited, and perhaps partially colonized, by the Cartha-

[1] Berthelot, S., Antiquités Canariennes, Paris, 1839.

[2] Faidherbe, Quelques mots sur l'ethnologie de l'Archipel Canarien, Revue d'Anthropologie, vol. 3, pp. 91–94. Paris, 1874.

[3] For a recent summary of the evidence on this point, cf., David Bannerman, The Canary Islands, their History, Natural History and Scenery, London, 1922, chap. 2, pp. 26–44.

ginians. There are a certain number of obviously Arabic words in the remnants of the Canarian vocabularies. But it does not seem that any anthropologist is on safe ground when he selects a certain subtype of ancient Canarian skull and labels it "Semitic." Verneau's "Semites" of Gran Canaria have been shown to resemble very closely the Spanish Basques and the "Nordic" subtype of Tenerife (supra, p. 240). They resemble the Basques rather more closely than they resemble the Arabs of Algeria, with whom Verneau identifies them. Yet one may well be unwilling to suggest that they spoke Basque. If by a "Semitic" type, Verneau means simply what is now called the Mediterranean race — dolichocephals with leptoprosopic faces, leptorrhine noses, and hypsiconch orbits — I am entirely in agreement with him as to the prevalence of this type in antiquity in Gran Canaria.

Professor Verneau's main thesis is that the Guanches were the descendants of the so-called "Cro-Magnon" race, which he thinks emigrated southward from the Dordogne region at the end of the Palaeolithic period, sojourned in the Spanish peninsula during the Neolithic period, and crossed over to Africa and arrived in the Canary Islands before the Roman period. This "Cro-Magnon race" in the Canary Islands was characterized by great stature and light pigmentation, dolichocephalic crania with short, broad faces, low orbits, and narrow noses. It should be remarked here that there is no evidence for the assumption that the blond element in the Canary Islands was characterized by the form of cranial disharmony described, nor can it be said that there is any valid reason for attributing blondness to the troglodytes of the Vézère. The disharmonic type which Collignon identified in the Dordogne as descendants of the Cro-Magnon people is very dark. Nor do the broad-faced, long-heads found there and elsewhere in Europe and Africa exhibit great stature. Sergi pointed out some years ago that Verneau's own data show an abundance of leptoprosopic or long, narrow-faced skulls among the Guanches of Tenerife, although he believed that the Guanche type of face was broad and short.[1] Lajard, in his valuable treatise upon the crania of modern inhabitants of Tenerife and Gran Canaria, showed that in half of eight indices studied the means of the modern Canarians are closer to the Cro-Magnon measurements than are the corresponding means of the Guanches.[2] I have demonstrated in detail the differences between the Guanches of Tenerife and the "race" of Cro-Magnon, and have offered evidence of the hybrid character of this latter type (supra, pp. 192–204). I cannot therefore concur in the opinion of Verneau, or of any of his predecessors or successors who consider the cranial resemblance of Guanche skulls to the Cro-Magnon type as indicative of any close relationship between these two groups, so widely separated geographically and chronologically.

Verneau recognized the existence of a short-statured brachycephalic type, found in the largest numbers in Gomera, but present also in Tenerife and in some of the other islands. This type he did not attempt to identify. Meyer and Von Luschan have accepted Verneau's Guanche-Cro-Magnon type and have identified the short, brachycephalic type of

[1] G. Sergi, The Mediterranean Race, London, 1901, p. 136.

[2] Op. cit., pp. 310–314.

Gomera as Armenoid.[1] This type is described as brachyhypsicephalic, very broad, short, and high. The nose is narrow and straight, and the face is long and narrow. The cephalic index is 84 and the vertical index 79.5. No such brachyhypsicephalic type with long and narrow face occurs in any of the large mass of material that I studied, nor can I find evidence of such an Armenoid type in the data of other investigators. Sergi, too, is of the opinion that the brachycephalic type found in Gomera and elsewhere in the islands "cannot with any probability be described as Armenoid."[2] Sergi describes a skull of this type in the Rome Museum of Anthropology and calls it *Sphenoides canariensis*, because he has never seen a similar skull elsewhere. This skull has a length-breadth index of 81.3, but its length-height index is only 71.8. The distinguished author of "The Mediterranean Race" was of the opinion that all the crania of the Canary Islands, except the variety just named, are common to the various groups of the Hamitic stock in Africa, and occur in the Mediterranean among the populations of Southern Europe. In his opinion the primitive population of the Canary Islands was derived from North Africa, and constituted the last expansion of African emigration towards the west. On the subject of Cro-Magnon affinities he wisely refrains from any definite statement.

Bertholon and Chantre. Bertholon and Chantre, to whose admirable work on the anthropology of Eastern Barbary frequent reference has been made in this memoir, recognize, both in antiquity and at the present day, the following skeletal and somatic racial types in Tripoli, Tunisia, and Algeria:

(1) *Negroid type.* Found in Neolithic sites and subsequently down to the present day. Small stature, delicate bones. Mesocephalic cranium, microseme orbits; nose very mesorrhine or sometimes platyrrhine; face short; facial prognathism not exaggerated. This ancient type is found today sporadically in the north, and commonly in the oases of the south. It is mixed with various Berber stocks.

This is the "Mediterranean-Negroid" type found in the ancient Canary Islands, and particularly in Gran Canaria and Hierro, according to our investigations.

(2) *Dolichocephalic mesorrhine type.* This type appears in the caves of the Polished Stone period. It is also short in stature, but with an elongated cranium. The cephalic index runs from 72 to 73. Bony structure is massive. The glabella is prominent and there is sometimes a torus. The *norma verticalis* is usually pentagonal. The orbits are very microseme. The nose is mesorrhine (50–52). The zygomata are extremely spreading, while the face is short. The facial index is very low. There is a disharmony between the short, broad face and the elongated skull.

The long bones show great physical vigor. The muscular attachments are prominent. The humerus shows slight torsion; the femora are pilastered; the platycnemia of the

[1] Meyer, Die Insel Teneriffe, Leipzig, 1896; Ueber die Urbewohner der Canarischen Inseln, in Adolph Bastian Festschrift, Berlin, 1896.

F. Von Luschan, Anhang über eine Schädelsammlung von der Canarischen Inseln, in Meyer's "Die Insel Teneriffe."

[2] Op. cit., p. 141.

tibiae is considerable. The stature of the males averages about 165 cm., and that of the females 153 cm. The skin-color of this type is dark, and the eyes are dark.

This type forms a continuous mass along the Mediterranean coast from Mezrata to Bizerte. Everywhere in the interior it is found in the mountain regions, and in areas generally poor and inaccessible. It is often mixed with brachycephals.

This type frequently occurs among the ancient inhabitants of the Canary Islands and corresponds to the smaller skulls of the " Guanche " morphological category. It has often been mistaken for " Cro-Magnon " when it occurs in large individuals. In the case of the smaller individuals it is probably the result of a cross between a Mediterranean or Mediterranean-Negroid dolichocephalic stock and a short, broad-faced brachycephalic stock. Bertholon and Chantre do not fail to recognize its affinities both with the Mediterranean race and with the crania from the cave of Beaumes-Chaudes, the cave of l'Homme Mort, and the dolmens of the Lozère.

(3) *Dolichocephalic leptorrhine type.* This type appears with the dolmens. It is a type of very great stature. The skull is less elongated than that of the small dolichocephals. It is not quite as muscular, judging from the impressions on the bones. The *norma verticalis* is generally oval. The nose is often continuous with the frontal region. The nasal index is leptorrhine (46–47). The orbit is high and its index is megaseme. The face is narrow and elongated, but in crosses the zygomata are enlarged.

Bertholon and Chantre have numerous series of subjects of this type with average statures above 170 cm. The women average 157 cm. The skin-color in the pure type is white; the eyes are light, often blue; the hair and the beard are blond. This type in Eastern Barbary is concentrated in the central plateaus.

This is the blond " Nordic " type of Tenerife and the Canary Islands. Some of our large " Guanche type " crania belong also to this category. It is often mixed with other strains both in the Canary Islands in antiquity, and in Barbary today. Bertholon and Chantre correctly identify this element in Barbary as Nordic.

(4) *Brachycephalic type.* This type occurs in the dolmens of Roknia. It is occasionally found in Carthaginian subjects. It predominates at Gerba, on the eastern coast of Tunisia, and in Kabylia. The cephalic index occasionally touches 87, but its original brachycephaly is usually diminished by mixture. The frontal region is broad, with well developed bosses. The cranial capacity is large. The orbital index is ordinarily mesoseme, but is often diminished through crossing with the short, dolichocephalic race. The nose is mesorrhine: 49 to 50 on the cranium, and 70 to 72 on the living. The face is short. Its brevity is exaggerated by crossings with the short, dolichocephalic race and by spreading of the zygomata. These brachycephals of pure stock are short: 164 cm. in the case of males, and 154 cm. in the case of females. The pigmentation of this type is dark, except when crossed with the blonds. The skin is yellowish.

This Gerba type is certainly our brachycephalic Canary Islands type, found in its

greatest purity in Gomera. Bertholon and Chantre rightly reject the theory of its relationship to the Armenoid race of Asia Minor, and demonstrate its close affinity with the Alpine brachycephals of Western Europe. They fail to recognize its Mongoloid affinities.

The principal differences between our results and those of Bertholon and Chantre for Eastern Barbary are as follows: (*a*) They regard the dolichocephalic, broad-faced type of small stature as an original primitive Mediterranean type, while in our opinion it is a mixed type due to the crossing of a dolichocephalic, long-faced Mediterranean type with a short-faced and probably brachycephalic type. (*b*) Our investigation shows the presence in the Canary Islands of a pure dolichocephalic, leptorrhine, and leptoprosopic Mediterranean stock of small size, which we, as well as Bertholon and Chantre, distinguish with difficulty from the larger Nordic type of almost identical morphological features. In fact, the investigators of the anthropology of Eastern Barbary have usually failed to make this distinction in their skull studies. They have also neglected to point out the exact relation of the so-called "Cro-Magnon race" to these mixed disharmonic types.

I am fully prepared to admit that not all short-faced dolichocephals are necessarily the result of mixtures with short, broad-faced brachycephals. Excessive use of the masticatory muscles in short-faced peoples may often cause a spreading of the malars and the zygomata. This hypertrophy of the masticatory muscles is frequently evinced in crania of Guanches. In general, however, the Guanches are not distinguished so much by the prominence of the malars and the breadth of the face, as by its shortness. Short faces, but not broad faces, were a characteristic of the old Palaeolithic, macrodolichocephalic Galley Hill type, which is probably the most important component in the modern Nordic race.

Dixon. A most interesting recent contribution to the ethnology of the ancient Canarians has been made by my colleague, Professor R. B. Dixon, who utilized the material of the present monograph.[1] His method of analyzing the racial elements in any given group of crania consists in separating the series into subgroups, according to the various subdivisions of the length-breadth, length-height, and nasal indices, which individual crania present in combinations. He assumes that the intermediate categories of each index, e.g. mesocephals, orthocephals, mesorrhines, are the result of intermixture between individuals presenting the extreme categories of the respective indices. When, therefore, he finds a mesocephalic, orthocephalic, mesorrhine cranium, he regards it as the result of intermixture between a dolichocephalic, hypsicephalic, leptorrhine stock and a brachycephalic, chamaecephalic, chamaerrhine stock, or between some such combinations of the assumed pure extremes of the three indices involved. The possibilities of such combinations of "pure" types for the three indices being eight, he finds the following fundamental types:

D H L	Caspian	B H L	Alpine
D C L	Mediterranean	B C L	Ural
D H P	Proto-Negroid	B H P	Palae-Alpine
D C P	Proto-Australoid	B C P	Mongoloid

[1] R. B. Dixon, The Racial History of Man, pp. 201–202. New York, 1923.

It is not my intention to discuss the validity of the assumptions upon which Dixon's method is based. Obviously it leaves out of account non-measurable morphological features; it assumes that intra-racial sex variations fall within the limits of the same indicial subdivisions, and that the somewhat arbitrary index subdivisions selected by Retzius, Broca, and others are more or less conterminous with biotypes. Although grave objections may be urged against this method, it has at least one undoubted merit. It considers the composition of cranial groups on the basis of individual skulls, rather than relying upon the arithmetic means of separate characters which may be individually fictitious, and which give us no accurate knowledge of their occurrence in combinations. Certainly the old method of judging racial affinities by means of measurements and indices involves too great a reliance upon a hypothetical medium type. It is equally clear that Dixon's method of utilizing certain combinations of index subdivisions is likely to attribute racial significance to individual and sex variations. Nevertheless the work is worthy of serious consideration for the following reason, if for no other: Dixon is apparently the only scholar who has attempted in recent times to analyze and correlate all existing cranial data from every part of the world. Fairness and common sense demand, therefore, that the results of his investigations be judged not alone from a methodological standpoint, but also by comparison with the results which have been secured by other investigators who have utilized other and more generally accepted anthropological methods.

Table 186 is derived from Dixon's unpublished analyses of the cranial material upon which this work is based. A glance at the table reveals the somewhat startling fact that all of Dixon's eight fundamental types are present in the ancient population of the Canary Islands. It seems hardly possible that this remote archipelago on the uttermost edge of the ancient world should have been the home of the representatives of all of the primary human types. Dixon, however, explains this by pointing out that primitive types tend to be driven into remote areas and are thus likely to be " marginal " in distribution.

TABLE 186. Dixon's Fundamental Types. (Percentages)

Index combination and type name	All Canaries		Tenerife		Gomera		Gran Canaria	Hierro
	Males	Females	Males	Females	Males	Females	Males	Males
D C L "Mediterranean"	24.8	10.0	35.0	20.8	10.5	3.8	11.3	16.6
D C P "Australoid"	21.2	19.9	7.4	8.4	9.0	3.8	28.3	4.1
B H L "Alpine"	19.7	17.4	12.7	9.8	18.0	...	16.5	...
B H P "Palae-Alpine"	7.3	5.8	7.4	11.0	9.5	26.7	7.0	...
B C P "Mongoloid"	7.8	21.8	13.6	28.6	22.5	7.6	7.1	37.4
D H P "Negroid"	6.4	13.0	10.0	11.7	15.0	15.3	21.1	24.9
D H L "Caspian"	5.6	0.9	6.2	6.0	13.5	3.8	4.7	12.3
B C L "Ural"	4.8	9.1	5.4	6.4	1.5	34.3	2.3	4.1
Totals								
Per cent	97.6	97.9	97.7	102.7	99.5	95.3	98.3	99.4
Number	295	102	230	76	33	13	21	12

In compiling this table, all middle divisions of the three indices involved were resolved into the extreme categories assumed to represent the pure types. By such a method a

mesocephalic, orthocephalic, mesorrhine skull might be referred to the crossing of (*a*) a dolichocephalic, chamaecephalic, leptorrhine stock with a brachycephalic, hypsicephalic, platyrrhine stock; (*b*) a dolichocephalic, hypsicephalic, platyrrhine stock with a brachycephalic, chamaecephalic, leptorrine stock; (*c*) a dolichocephalic, hypsicephalic, leptorrhine stock with a brachycephalic, chamaecephalic, platyrrhine stock; (*d*) a dolichocephalic, chamaecephalic, platyrrhine stock with a brachycephalic, hypsicephalic, leptorrhine stock. Thus any of Dixon's eight fundamental types may be deduced from such a medium-index-division skull. It is then possible to make a large number of alternative resolutions in a series which, like the present one, contains a preponderance of middle-index grade crania. The above table represents only one such resolution. Dixon does not profess to be able to select the proper proportionate solution in such an intricately mixed series as the one in question, without a more detailed study than his method of index analysis affords.

First of all, we may discuss the points in which the present investigation stands in agreement with the above analysis of Dixon. We both find a strong Mediterranean race element, more or less evidence of an Alpine or Mongoloid element or both, some traces of "Nordic" or "Caspian," and evidence of a Negroid or Proto-Negroid strain. Finally Dixon's scheme includes a strong Proto-Australoid element, while we have classified as Australoid or Guanche-Australoid two Tenerife crania.

TABLE 187. Distribution of Morphological Types. (Hooton)
(Numbers and Percentages)

Type		Tenerife		Gomera		Gran Canaria		Hierro		All Canaries	
		Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Mediterranean Medit. × Guanche Medit. × Nordic	No.	19	36	2	3	11	6	9	5	41	50
	Per cent	7.8	47.4	5.8	27.3	55.0	100.0	69.2	71.4	13.2	50.0
Near Nordic Nordic × Guanche	No.	79	11	12	5	4	..	3	..	98	16
	Per cent	32.5	14.5	35.3	45.4	20.0	..	23.1	..	31.0	16.0
Guanche	No.	138	29	11	1	5	..	1	..	155	30
	Per cent	56.8	38.2	32.4	9.1	25.0	..	7.7	..	50.0	30.0
Alpine Alpine × Medit. Alpine × Nordic Alpine × Guanche	No.	2	..	8	2	..	..	..	..	10	2
	Per cent	0.8	..	23.5	18.2	..	..	..	..	3.1	2.0
Negroid Medit. × Negroid	No.	3	..	1	..	..	..	..	2	4	2
	Per cent	1.2	..	2.9	..	..	..	..	28.6	1.3	2.0
Australoid	No.	2	..	..	..	..	..	..	..	2	..
	Per cent	0.8	..	..	..	..	..	..	..	0.6	..
Total number		243	76	34	11	20	6	13	7	310	100
Per cent		78.9	76.0	14.0	11.0	6.7	6.0	4.2	7.0		

The present morphological-type-classification leaves in a very large residual class the local blend called the "Guanche" type. Dixon resolves all skulls into component proto-

TABLE 188. Morphological Type Classifications Compared with Dixon's Indicial Classifications

	All Canaries		Tenerife		Gomera		Gran Canaria	Hierro
	Males	Females	Males	Females	Males	Females	Males	Males
Hooton								
Nordic	31.0	16.0	32.5	14.5	35.3	45.4	20.0	69.2
Mediterranean	13.3	50.0	7.8	47.4	5.8	27.3	55.0	23.1
Total N M	44.5	66.0	40.3	61.9	41.1	72.7	75.0	92.3
Dixon								
Caspian	5.6	0.9	6.2	6.0	13.5	3.8	14.7	12.3
Mediterranean	24.8	10.0	35.0	20.8	10.5	3.8	11.3	16.6
Total C M	30.4	10.9	41.2	26.8	24.0	7.6	26.0	28.9

types, and inevitably gets into difficulties between alternative resolutions, partly because of his unfamiliarity with the actual material. Thus it may be seen from Table 188 how radically different my proportions of "Nordic" and "Mediterranean" are from the "Caspian" (one of the components of the Nordic type) and "Mediterranean" percentages found by Dixon. It is evident that on morphological grounds I have classified as "Nordic" many DCL crania which Dixon by his method calls "Mediterranean." Neither of us are infallible, of course, but Dixon has followed an arbitary scheme, while I have based my assignments upon anatomical impression, as the result of handling the material. No doubt some morphological classifications of individual crania, and perhaps many of them, are incorrect. It is equally certain that no one could arrive at a correct estimate of constituent racial types, even allowing the validity of Dixon's method, without handling the series.

It is, however, in connection with elements other than the "Mediterranean" and "Nordic" or "Caspian" — that radical disagreement with Dr. Dixon arises. In the first place it has been demonstrated in this investigation that the majority of the mesocephals in this series are due to the intermixture of small dolichocephals and large dolichocephals, and but few to the intermixture of dolichocephals and brachycephals. The high proportions of brachycephalic factors of all three "primary" types found by him (40.1 per cent of males) is incredible, in view of the small number actually existing in the series (26), and of the undeniable tendency toward the dominance of large head-breadths over smaller ones.

In the table of proportions for the combined series of all of the islands, Dr. Dixon gives 21.2 per cent and 19.9 per cent as the proportions of the Proto-Australoid (DCP) type. But in none of the islands, taken separately, does this percentage exceed nine in his own resolutions, except in the short series from Gran Canaria. This merely means that Dr. Dixon has made a different resolution for the combined groups than for the separate islands. But it illustrates the difficulty of a consistent application of his method. Similarly the Proto-Negroid element for all islands is given as 6.4 per cent for males and 13 per cent for females, whereas for the individual islands the percentages range from 10 to 24.9 for males, and from 11.7 to 15.3 for females. In the present classification of crania by morphological types, two crania, or 0.6 of the Tenerife male series, were called "Australoid," largely because of supraorbital tori, retreating frontal regions, and short, broad faces. Morphologi-

cally there is a very great gap between the Australian type of skull and the types usually met with in the Canary Islands.

Dixon finds a "Proto-Negroid" element in all of the islands, while I distinguish 1.3 per cent of male crania as "Negroid" or "Mediterranean-Negroid" on the basis of morphological type. It is very probable that the strength of this influence has been underestimated, but such influence is not very apparent in the crania. In general one may admit that mesocephals usually are the result of mixtures (and the same is perhaps true of orthocephals), but not necessarily that mesorrhine nasal indices are the result of the intermixture of leptorrhine and platyrrhine stocks. In our series the breadth of the nose remains fairly constant throughout the various islands, but the height of the nose is reduced in the short-faced crania and increased in the long-faced crania. A very slight change in nasal diameters produces a marked change in the nasal index. The nasal index increases about two whole units with every one-millimeter increase of breadth, and drops about one index unit with every millimeter increase of nasal height. The range of the mesorrhine classification is five index units. The standard deviation of the nasal breadth of 250 Tenerife male crania is $1.60 \pm .05$ mm. In other words the average deviation from the mean of nasal breadth is almost sufficient, if the nasal height were constant, to cause the nasal index to oscillate from leptorrhine to platyrrhine. The standard deviation of the nasal index for the same group is $4.48 \pm .14$ index units, which is almost equal to the range of the mesorrhine classification. The variabilities of the nasal index within any group, however homogeneous, are so great that only very pronounced differences between groups can be considered racially significant The range of the mesorrhine classification is far too small to be a measure of hybridity between extreme forms. If it were possible to isolate a pure racial group it would probably be found that all three, or at any rate two, of the three categories of the nasal index would be included within the range of individual differences.

In a series of 295 male crania from the Canary Islands there are only 5 crania, or 1.7 per cent, which are dolicho-chamae-platyrrhine (DCP). It is hardly possible that the DCP factors could then be reckoned with any probability at 21.2 per cent of the series. The Proto-Negroid factor is reckoned at 6.4 per cent for males and 13 per cent for females. But there is not one skull of this description in the entire series. The Alpine factor is reckoned at 19.7 per cent for all males and 17.4 per cent for females. Actually there is one BHL male cranium in the series(0.3 per cent), and not one female cranium. It seems, therefore, that Dixon's resolutions are purely arbitrary. Of 295 male crania only 17 actually represent any of Dixon's fundamental types. These are: DCL 8, DCP 5, BCP 2, BHL 1, DHL 1. It is therefore clear that he had very little data on the basis of which to make his resolutions. In fairness to Dixon it must be said that he regards the degree of mixture in this group as the highest he has met with in all of his craniological survey, and consequently he considers this series the most difficult for a successful application of his method. We must agree with him that the various stocks constituting the population of the Canary

Islands have interbred until they present a most extraordinary complexity, but not that this is due to the intermixture of as many as eight fundamental types.

One contribution of Dr. Dixon to the ethnology of the Canary Islands which is notable, is his identification of the Mongoloid affinities of the brachycephals found in Gomera and, more rarely, in some of the other islands. It will be remembered that Verneau and Sergi were unwilling to commit themselves as to the racial identity of this type, which Von Luschan wrongly, it would seem, declared to be Armenoid. Dixon says:

> The facts suggest that the Guanche proper were an immigrant folk closely related to the Berber peoples of North Africa, the people whom they dispossessed and partly absorbed being a remnant of the ancient blend between the very early Mongoloid and the Proto-Negroid. This suggestion seems to be confirmed by a comparison of the Teneriffe crania with those from the most outlying islands of the group, which theoretically ought to have preserved the largest proportion of the pre-Guanche population. This proves actually to be the case, for in Hierro and Gomera the Mongoloid type is present in larger proportion than in Teneriffe. On the other hand, in Grand Canary, which lies nearer the African mainland, the proportion of Proto-Negroid factors is larger.[1]

The suggestion of Mongoloid affinities of the Canary brachycephals is substantiated by the more elaborate comparative study of the measurements and indices of the brachycephals in the present investigation (supra, p. 249). Craniometrically they show a very close resemblance to Kalmucks. But morphologically few or no Mongoloid features are observable in these crania, some of which have been classified as " Alpine." They evidently represent a Mongoloid-Alpine blend with measurements and indices somewhat closer to the Mongoloid type, and morphological features more closely approximating the Alpine. In Gomera, where the type is purer, the Mongoloid chamaecephaly is less apparent than it is in Tenerife. This type does not appear in Hierro, except in a very small proportion and in a state of intermixture with others. A large " Proto-Negroid " factor which Dixon recognizes in Gran Canaria, appears to be primitive Mediterranean, with a slight Negroid admixture.

In summarizing our conclusions as to the results of the application of Dixon's method to the Canary Island material it may be said that it has yielded far more accurate general results than would have been anticipated by any anthropologist who seriously doubts the validity of some of the assumptions upon which the method is based and denies categorically the correctness of others. Taken in detail, his proportions of various factors are little more than guesses, some of them apparently wide of the mark, but in pointing out the marginal distribution of certain types and in identifying the Mongoloid factor in the brachycephals, Dixon has made a most useful contribution to the subject. In craniological groups less mixed, in which a large percentage of his fundamental types have actually survived, it is probable that his method of analysis yields much more accurate detailed results. I am not, however, convinced that the presence of a given index combination necessarily indicates the presence of the racial factor with which he has identified that particular combi-

[1] R. B. Dixon, op. cit., pp. 201–202.

nation. The method does not, in my opinion, allow sufficiently for individual and intra-racial variation.

ATTEMPTED CORRELATIONS OF CULTURE, LANGUAGE, AND SKULL-TYPE

TABLE 189. Correlation of Language Elements with Morphological Classification of Crania

	Berber, Berber (?), Arabic words. Per cent	"Mediterranean" and "Negroid" Per cent	Non-Berber words Per cent	"Nordic" and "Guanche" Per cent	P-words Per cent	"Nordic" "Alpine" Per cent
Tenerife	33.7	18.8	66.2	81.0	33.3	28.8
Gomera	33.3	11.1	66.6	66.6	33.3	60.0
Gran Canaria	59.2	65.3	40.5	34.6	10.0	15.3
Hierro	62.5	70.0	37.5	20.0	6.7	15.0

The table above is a very crude effort to test the possible relation of linguistic elements in the extant Guanche or Canarian vocabularies, as classified by Abercromby, to the ratios of various types of skulls in the collections here studied. Such a method has no value unless the remnant of Canarian language can be assumed a random sample of the original vocabularies, unless the skeletal series studied can be assumed a random sample of the ancient population, and finally, unless Abercromby's linguistic classifications and our morphological skull classifications are correct. Only a very optimistic person could hope for the exact fulfilment of such conditions. Aside from words which are place names, there are only 9 words extant from Gomera. The skull collection from Gran Canaria includes 26 crania, and that from Hierro only 20 crania. Even if the ideal conditions of sampling and correct identification were fulfilled, we should have to assume that the percentage of a physical type in a given population is related to the proportion of their linguistic contribution to the common dialect of the mixed peoples. It is evident that this attempted correlation must not be taken too seriously.

One would naturally attribute the Berber, probable Berber, Arabic, and Spanish derivatives to the dolichocephalic, brunet, Mediterranean race element in the population. Thus it is noted that in Tenerife and Gomera, where the Mediterranean and Mediterranean-Negroid elements are supposed to be weakest, the percentage of Berber and Arabic derivatives is smallest. On the other hand, in Gran Canaria and Hierro, where the Mediterranean-Negroid elements are strongest, the Berber and Arabic derivatives constitute the majority of the extant vocabulary.

Again in Tenerife and Gomera, where the "Nordic" and "Guanche" (mixed) types constitute the majority of the population, the non-Berber words comprise the bulk of the extant vocabulary, and in Gran Canaria and Hierro, where there are fewer representatives of these skull-types, the proportion of non-Berber words is correspondingly smaller.

The P-words, usually place names, are commonest in Tenerife and Gomera, where the "Nordic" type and the round-headed "Alpine" (?) type are particularly represented. In Gran Canaria and Hierro, where the brachycephalic element and the "Nordic" ele-

ment are weaker, the percentage of P-words is much lower. It is possible, therefore, that the small dolichocephals of our series represent the element which was responsible for the Berber and Arabic elements in the vocabularies of the ancient inhabitants of the islands, and that the large, dolichocephalic " Nordics," the small brachycephalic " Alpines," and their mixtures, the " Guanches," are to be connected with the non-Berber elements in Canarian languages.

TABLE 190. Classification of Culture Elements

Archaic Culture

1. Domesticated animals
2. Fishing
3. Stone-working
4. Bone-working
5. Wooden spears
6. Skin garments
7. Cords, mats
8. Cave dwellings
9. Cave burial
10. Mummification
11. Dancing, singing
12. Petroglyphs
13. Goddess

Guanche Culture

1. Pottery
2. Barley
3. Dry-stone huts
4. Chiefs, tribal organization
5. Warfare
6. Athletic sports
7. God of heavens
8. Evil spirit
9. Kingship
10. Tribal council
11. Social classes
12. Capital punishment
13. Priests, priestesses
14. Despised occupations
15. Trepanation
16. *Jus primae noctis*

Mediterranean Culture

1. Wheat
2. Painted pottery
3. Bride-fattening
4. Idols
5. Dry-stone tumuli

Gomeran Culture

1. Whistling language
2. Wife-lending
3. Sling and pellet

Intrusive Elements

1. Alphabetic inscriptions
2. Polished stone celts
3. Iron spear-points

In the absence of stratified archaeological remains and of scientific ethnological data, it is extremely difficult to relate the ethnography of the Canary Islands to the various racial elements which composed their population in antiquity. In Table 190 are grouped certain cultural features under the heading " Archaic Culture." These are all common to all of the islands, with the exception of the worship of a goddess, which, so far as early sources inform us, was confined to Hierro. Under the heading " Guanche Culture " are included features common to most of the islands, but sometimes missing in the westernmost islands. These features are found particularly in the islands where the blond element is supposed to have been strong. Under " Mediterranean Culture " are five cultural elements peculiar to Gran Canaria and indicative of a higher material level than that found in any of the other islands. The " Gomeran Culture " comprises three distinctive features. Three elements have been classified as " intrusive," because of the fact that their rarity and distribution make it probable that they are due to trade, or to the visits of seafaring people not directly related to the aboriginal civilization of the islands.

In Table 191 an attempt has been made to show the relationship of morphological cranial types to the culture-groups classified according to the preceding table. To this has been added the distribution of linguistic elements according to Abercromby's classifications.[1]

[1] Cf. supra, p. 17.

TABLE 191. Correlation of Cultural Features with Morphological Type and Linguistic Affinities (Percentages)

Distribution of Physical Type	Archaic Culture	Guanche Culture	Gomeran Culture	Mediterranean Culture	Intrusive Culture	Total Elements	Per cent of total
All four islands							
Culture	32.5	40.0	7.5	12.5	7.5	40	100.00
Type: Mediterranean	23.7	...	...	...	...	..	...
Guanche-Nordic	...	72.8	...	...	...	..	...
Alpine	...	...	2.9	...	...	..	...
Lang.: Berber (?)	15.7	...	...	...	...	..	...
Berber	...	...	...	18.9	...	..	...
Non-Berber	...	53.9	...	...	...	..	...
Arabic, Spanish	...	...	...	...	11.5	..	...
Hierro							
Culture	61.9	28.6	4.8	0	4.8	21	52.5
Type: Mediterranean	80.0	...	...	...	...	..	...
Guanche-Nordic	...	20.0	...	...	...	..	...
Alpine	...	...	0	...	...	..	...
Lang.: Berber	50.0	...	...	...	...	..	...
Non-Berber	...	37.5	...	...	...	..	...
Arabic	...	...	...	...	12.5	..	...
Gomera							
Culture	59.09	31.8	13.6	0	9.1	22	55.0
Type: Mediterranean	13.3	...	...	...	...	..	...
Guanche-Nordic	...	66.6	...	...	...	..	...
Alpine	...	...	22.2	...	...	..	...
Lang.: Berber	0	...	...	...	...	..	...
Non-Berber	...	66.6	...	...	...	..	...
Arabic	...	...	...	...	33.3	..	...
Tenerife							
Culture	40.0	53.3	3.3	0	3.3	30	75.0
Type: Mediterranean	18.8	...	...	...	...	..	...
Guanche-Nordic	...	81.0	...	...	...	..	...
Alpine	...	...	0.6	...	...	..	...
Lang.: Berber	25.0	...	...	...	...	..	...
Non-Berber	...	66.2	...	...	...	..	...
Arabic, Spanish	...	...	...	...	8.7	..	...
Gran Canaria							
Culture	34.3	42.9	2.9	14.3	2.9	35	87.5
Type: Mediterranean	65.3	...	...	...	...	..	...
Guanche-Nordic	...	34.6	...	...	...	..	...
Alpine	...	...	0	...	...	..	...
Lang.: Berber (?)	33.3	...	...	...	...	..	...
Non-Berber	...	40.5	...	...	...	..	...
Berber	...	...	...	14.3	...	..	...
Arabic, Spanish	...	...	...	...	11.9	..	...

From this tabulation the islands of La Palma, Fuerteventura, and Lanzarote have been omitted because of lack of sufficient cranial data.

The cultural and physical relationship of the four islands in combination are shown in the first part of the table. The culture group which bulks the largest is the so-called " Guanche " group, including the Guanche-Nordic skull-type, and the possibly associated non-Berber linguistic element. Next comes the " Archaic " culture, with the " Mediterranean " skull-types and the possible Berber words; then the higher " Mediterranean "

culture with which the Mediterranean type of skull was probably also associated, and finally the Gomeran elements with which it is natural to connect the Alpine-Mongoloid type of skull.

In Hierro we find a predominance of the Archaic culture, the Mediterranean and Mediterranean-Negroid types, and the words of Berber origin or of possible Berber origin. The Guanche culture, the Guanche-Nordic skull-type, and the non-Berber linguistic elements are secondary. In Gomera the Archaic culture is still predominant, but the Mediterranean type is only tertiary in importance, and the nine extant Gomeran words include none of probable Berber affinity. The Guanche-culture group is secondary in proportion, but the Guanche skull-type and the non-Berber linguistic elements prevail. The third culture group in importance is the so-called Gomeran, associated with which we have the Alpine-Mongoloid cranial type taking second place in importance. Thus in Gomera, skull-type proportions are not in accord with cultural-group associations. It should be recalled, however, that the paucity of Guanche-cultural elements in Gomera may be due in a measure to the scantiness of our information concerning the social organization of the Gomerans, since elements of social organization rather than of material culture predominate in the so-called Guanche-cultural group.

In Tenerife, Guanche culture, Guanche and Nordic skull-types, and non-Berber linguistic elements predominate, but the Archaic culture contributes a higher proportion than do the Mediterranean skull-types or the Berber linguistic elements. Finally, in Gran Canaria the combined elements of the Archaic and advanced Mediterranean cultures predominate, together with the Mediterranean skull-types, and the Berber and possible Berber words.

The reader must realize of course that culture-groups, morphological skull-types, and linguistic classes are all more or less arbitrary. At best they are only approximate. It is certain, for example, that the so-called Alpine-Mongoloid physical type is not altogether lacking in Gran Canaria, although it was not recognized in the classification of the small series of skulls from that island. It was almost certainly present to some extent in Hierro also, although not in our series. The paucity of linguistic and cultural data from Gomera makes the correlation in this island very dubious.

TENTATIVE RECONSTRUCTION OF THE PREHISTORY OF THE CANARY ISLANDS

On the basis of cultural, linguistic, and somatological evidence, the prehistory of the Canary Islands may be tentatively reconstructed as follows: The first settlement of the archipelago probably took place some time during the Neolithic period. The settlers seem to have been dolichocephalic, mesorrhine, short-statured brunets of Mediterranean race origin, with some Negroid admixture. These settlers probably came from the mainland of Africa south of Morocco, or from the region of the Wady Draa. They brought with them domesticated sheep and goats, a chipped-stone and bone industry; but they probably had

no knowledge of cultivated cereals and did not make pottery. They may have spoken some proto-Berber language. Their social and religious organization was probably very simple; they had developed rain ceremonies and they may have worshipped a fertility goddess. They were not warlike. This culture and the bringers of it survived in a relatively unmixed form in the island of Hierro.

The second invasion of the islands came at a time when pottery was commonly made in North Africa and when barley was the sole cultivated cereal. The second invaders came from the Anti-Atlas and Atlas region and probably penetrated only the southern islands: Gran Canaria, Tenerife, Gomera, and possibly Hierro. They seem to have been short, platycephalic, broad-heads with short, broad faces and wide noses. They were undoubtedly brunet whites with some Mongoloid features. Their center of distribution in North Africa was the Gulf of Gabes and Eastern Tunisia. From this region they worked southwest along the southern slopes of the Atlas and westward through the Tunisian and Algerian Tell into the Rif and the High Atlas region of Morocco. They introduced into the Canary Islands the cultivation of barley, the use of crude and usually unornamented pottery, the sling and pellet. This element was probably responsible for the cult of dog-worship and the habit of cynophagy which apparently gave its name to the islands. It is possible, however, that these features may also have been a part of the culture of the earlier Mediterranean-Negroid group. This brachycephalic group survived in its purest cultural and physical form in Gomera. It seems to have used a non-Berber language, in which P-sounds were common, and it was certainly responsible for the famous whistling language of Gomera. Some of its members may originally have inhabited the ancient North Moroccan province called Gumera, which is now the Rif. These people mixed with the Mediterranean-Negroid carriers of the "Archaic culture," in Gran Canaria, Tenerife, and Gomera. They probably did not penetrate Hierro except in very small numbers and seem to have left Fuerteventura, Lanzarote, and La Palma uncolonized.

Almost simultaneously with the second invaders of Alpine-Mongoloid physical characters, a third group arrived in the islands. This group already contained a strong admixture of the Mongoloid-Alpine stock, but it consisted predominantly of tall. blond dolichocephals, with long faces and narrow noses. The material culture of these invaders included no new element of importance. But they were very warlike and extremely fond of athletic contests. They had already established a caste system consisting of warrior-nobles (for the most part of the tall, blond type) together with agricultural and pastoral retainers of mixed descent. They worshipped a supreme being who was supposed to inhabit certain high peaks or rocks, and they reduced the dog-divinity of their predecessors to the status of an evil spirit. Their nobles practised the *jus primae noctis* upon the daughters of the inferior castes; their own women were held in the very highest respect. As a result of their frequent wars and of their custom of duelling, they had developed certain surgical practices. Prominent among these was the trepanation of the skull in case of concussions

or depressed fractures, but more frequently, and as a remedy for sickness as well as for trauma, they employed cauterization of the scalp and of the skull-vault. These invaders of principally " Nordic " race came from the Atlas ranges of Morocco and Algeria. There is some reason for supposing that they came particularly from the Mediterranean coastal area of the Rif. This is the present centre of blondism nearest to the Canary Islands, although in antiquity and today the blonds extend eastward at least as far as Tripoli. Although the blond invaders reached all of the islands, they seem to have been concentrated in the northern part of Tenerife. La Palma, which lies northwest of Tenerife, apparently contained a good many blonds, but in Gomera they were certainly in the minority and very few reached Hierro, the most southern and western island of the group. It is therefore probable that the blond invaders came from the northeast, and, touching first at Lanzarote and Fuerteventura, worked southwest from there to the remaining islands. It is hardly probable, however, that these invaders could have sailed out through the Pillars of Hercules, from the Mediterranean. Such a voyage would scarcely have been accomplished by people so little versed in navigation that, subsequent to their arrival in the islands, they lost the art entirely. These blond invaders probably spoke an early Libyan language similar to that of the preceding brachycephalic folk. Arriving in the islands,these Canarian " Nordics " established themselves as a military aristocracy, dominating the brunet Mediterranean-Negroids and the Alpine-Mongoloids. They believed in divine right, and, in their stronghold of Tenerife, in Gran Canaria, and probably in Lanzarote and Fuerteventura, they set up kingships with maternal descent. In Tenerife the use of the skull of a former monarch in coronation ceremonies and the use of his humerus as a sceptre are so strikingly reminiscent of the analogous custom in the Hamitic-Negroid kingdom of Uganda, far away in East Africa, that one is inclined to speculate as to the possibility of southeast migrations of the prehistoric blond Libyans, or to wonder if it is possible that these features may rather have been derived from the Mediterranean-Negroid element which may have filtered westward along the edge of the Sudan. In view of the fact that the earliest migrations of the proto-Bantu were eastward from some point in the northern or western Sudan, it seems more probable that skull ceremonies in the Hima dynasty in Uganda are of later origin than the almost identical customs in Tenerife and, unless they are entirely unrelated, that they came from Northwestern Libya.

The Canary Islands " Nordics " mixing with the broad-faced brachycephals, created a hybrid type with long head and broad face, often of large stature, and probably of light pigmentation or medium complexion, with brown, red, or blond hair. This is the so-called " Cro-Magnon " type, the existence of which in Europe may be attributed to a mixture of closely similar or identical racial elements. Intermarriage of the short, broad-faced brachycephals with the long-headed, mesene, Mediterranean-Negroids, produced a similar disharmonic combination, but on a much smaller scale and of darker pigmentation. The Guanche culture was the result of the fusion of these various stocks.

A fourth invasion of the archipelago affected principally the eastern islands: Gran Canaria, Lanzarote, and Fuerteventura. Culturally this is the stratum which has been named "Mediterranean." Physically it probably consisted, for the most part, of dolichocephalic, leptorrhine brunets of the Mediterranean type that Verneau identifies as "Semitic." This must have occurred at a time when bronze was already in use in the Eastern Mediterranean. These people seem to have left comparatively slight traces of their culture in Lanzarote and Fuerteventura, perhaps because of the dry and sandy inhospitality of these relatively undesirable islands. They concentrated upon Gran Canaria, where the warlike blond element was less powerful than in Tenerife. They introduced much better and more elaborate ceramic forms decorated in color, pottery stamps for making designs upon the body, and the cultivation of wheat. They were not troglodytes and they may have brought with them a few polished greenstone celts, but if so, the art of polishing stone was lost to them after they had settled in Gran Canaria, because of the absence of suitable material. These people were responsible for the superiority of the material culture of Gran Canaria and probably for the elaboration of its religious organization. They do not seem to have penetrated Tenerife, probably because of the warlike character of the Guanches. The people of Mediterranean culture probably spoke Berber. They may have reached the Canaries over the old migration route running southwest from the Gulf of Gabes through the oases, or skirting the southern slopes of the Atlas. Certainly some of their cultural features are of Mediterranean or even European origin; notably the cultivation of wheat and the use of the pottery stamps or *pintaderas*, which are found in Eneolithic Liguria and in the Troad. But other cultural traits, such as bride-fattening and the use of the dry-stone tombs called *ardjem*, are distinctly North African.

In addition to this "Mediterranean" migration, casual Arabs and Berbers in comparatively recent times must have reached the islands, and particularly Lanzarote and Fuerteventura, which lie nearest to the coast. The Arab elements seem to have been strongest in these islands, and Bontier and Le Verrier, the chaplains of Jean de Bethencourt, frequently refer to the kings of these islands as "Saracen kings."

Finally there is every probability that the islands were visited by early navigators — Carthaginians and others. The occurrence of alphabetic inscriptions in Hierro, Tenerife, and Gran Canaria, is probably due to such visits. The large number of inscriptions found on the island of Hierro in the single place called Los Letreros, might reasonably be interpreted as the work of the ancient inhabitants, especially since these were largely Mediterranean-Negroids and the inscriptions are said to be Numidian. Hierro is the only island which has yielded a sufficient number of these alphabetic inscriptions to make plausible the supposition that the people of the island are responsible for them. But we must consider also the fact that Hierro was the end of the ancient world and, being the smallest island of the group and the only one inhabited by peaceable people, it was the most likely place for ancient navigators to disembark and leave records of their presence, just as explorers

in modern times leave records of their approach to the proximity of the poles. On the whole it does not seem possible to reach any definite conclusion on this point, although the probabilities weigh in favor of the view that the inscriptions are intrusive.

The single inscription from Tenerife — if it be an inscription — was found on the northernmost point of the island, and is in an utterly unknown script. If it is genuine it is certainly intrusive. The inscriptions of Gran Canaria are too few to render in the least plausible the supposition of their local origin.

Against the hypothesis of multiple invasions set forth above, one may offer the theory of a peopling of the islands more or less simultaneously by a single group of peoples racially somewhat heterogeneous. Such a theory would require the explanation of interinsular differences on the basis of divergence due to isolation and other environmental factors. Differences in material culture could be referred to local adaptation and invention. The main difficulty in the acceptance of such a theory lies in the concentration both of the most primitive cultures and of the least mixed physical types on the marginal fringe of the archipelago, namely in La Palma, Hierro, and Gomera. In the latter two islands, for example, it would be necessary to suppose that quite different independent local physical types had developed out of a substantially similar racial complex; and that such radical differences in custom as are exemplified by the knowledge of barley and pottery in Gomera and the ignorance of these commodities in Hierro which is in plain sight of the former island, are explicable by local environmental conditions.

If all the inhabitants of the islands reached the archipelago at about the same time and all were at the same general stage of culture — having domesticated sheep and goats but no cereals and no pottery — it might be argued that the knowledge of these commodities was brought to the nearer islands by casual voyagers in later times, who failed to reach La Palma and Hierro. But from inscriptional evidence Hierro seems to have been visited most often. Because of its few inhabitants and their peaceable character we are told that the island was often raided and many of its inhabitants were carried off as slaves.

There is no doubt that communication between the islands at the time of the European conquest was rare, and ancient writers state that the Guanches had no knowledge of navigation. It is certain that the primitive settlers of the archipelago neither walked nor swam from the mainland. There is no geological evidence that the Canaries were a part of the mainland in any period, and the distance which separates the nearest of the islands from the coast is about 105 kilometers.

The conclusion that the islands were colonized by a number of groups of primitive navigators, is then inevitable. Subsequently, the art of navigation may have been lost in some or all of the islands, because of the lack of metals or hard stone for working the wood necessary in boat building, and because of the offshore set of the currents and the danger of the surf. But one is unwilling to credit to the full the statements of early writers concerning this matter of navigation. Bontier and LeVerrier certainly mention the use of a boat by the Gran Canarians. (Cf. supra, p. 58.)

Although the account of the colonization of the Canary Islands, as given above, cannot be considered a scientifically demonstrated thesis, it is at any rate based upon a fairly thorough survey of archaeological, ethnological, and somatological data available, and grows out of a correlation of these separate fields of evidence rather than from any preconceived theory.

EARLY EUROPEAN RACES IN THE LIGHT OF CANARIAN CRANIOLOGY

As a result of this study of the craniology of the ancient inhabitants of the Canary Islands and of the investigation of the affinities of the Guanches with early European cranial series, certain hypotheses concerning the origin and development of European races may be suggested.

The fundamental Galley Hill type. The basic modern type of man in Northern Europe and Western Europe was probably the Galley Hill type. This type was very long-headed, with a narrow and a somewhat low vault. The brain-case was of large size and the frontal region was of moderate development, with prominent brow-ridges. The face was probably, in the majority of cases, of medium length or rather short, but with somewhat compressed malars. The orbits were very low. The stature of this type was variable, but in most cases, low or medium. The bones were heavy and robust. This type was widespread in England and France during the Upper Palaeolithic periods of the glacial retreat. It almost certainly existed in England in the Mousterian and Acheulean periods. Recent evidence inclines the writer to accept the view of Keith [1] that this type of essentially modern man may have lived in England throughout the Pleistocene period, and it may even have been responsible for the late Pliocene artifacts at Foxhall. Its relation to the very archaic type of Piltdown is not at present clear. Whether or not one accepts the view of the great antiquity of this type, one has to admit that its development must have preceded by many thousands of years the late Palaeolithic period in which numerous of its remains appear in Europe. It seems probable that this Galley Hill type of man was flourishing in England during the Mousterian period, when France was occupied principally by the far more archaic and primitive Neanderthaloid type. The Neanderthal race does not appear to have reached England.

The early Mongoloid brachycephals and the hybrid Cro-Magnon types. This fundamental Galley Hill type, which might also be called the Combe-Capelle type, interbred with a brachycephalic, platycephalic, short-faced and broad-nosed type of man representing the first influx of Asiatic immigrants into Europe and Africa, which influx certainly took place before the end of the glacial retreat. This was a type with very low and broad orbits and with broad noses. The malars were probably projecting. In the opinion of the present writer, this early brachycephalic stock was Mongoloid or Proto-Mongoloid. The Galley

[1] A. Keith, The Antiquity of Man, London, 1915.

Hill people had very large skulls and the early Mongoloids had somewhat small skulls. The result of this mixture was a hybrid type of considerably greater stature than either of the parent stocks. The skull-form usually retained the great length of the Galley Hill type, but its breadth was largely increased across the parietal region. The length-breadth index remained dolichocephalic. The face remained very short, since it was short in both parent types, but its bizygomatic breadth increased considerably in conformity with the Mongoloid tendency and with the increased breadth of the skull as compared with that of the Galley Hill parent stock. The height of the skull-vault was more variable than in either of the parent types, but was relatively low. The nasal index in the parent Galley Hill type was probably mesorrhine, and in the brachycephalic stock was almost certainly platyrrhine (chamaerrhine). Possibly as a result of climatic conditions the nasal form, though very variable in the hybrid Cro-Magnon type, tended toward leptorrhiny. The high form of the nasal bridge is unquestionably a somewhat recent development and tends to be dominant over the more primitive low form. This hybrid and large Cro-Magnon type of man may have been largely responsible for the artistic development of the Upper Palaeolithic period. The possibilities of superior combinations of physical and mental characteristics were enlarged by the intermixture of two primitive but virile stocks, and the intermingling of two cultural streams produced the first notable efflorescence of human art. The brachycephalic element in the cross did not enjoy a superiority of numbers and was eventually swallowed up in the preponderating mass of the aboriginal dolichocephals. Since these Mongoloid brachycephals were not reinforced by succeeding invasions of the same stock, the large Cro-Magnon hybrids, who were probably somewhat unstable biologically, tended to disappear by the process of back-crossing.

Hybrid types very similar to the large Cro-Magnon type, but of smaller size, were produced by the crossing of the brachycephals with the small dolichocephalic, Proto-Mediterraneans in North Africa and elsewhere. The head-form in these crosses tended to be mesocephalic and the facial length short. This small Cro-Magnon type with a mesorrhine or platyrrhine tendency was also more or less disharmonic.

The origin of the Nordic race. The fundamental Galley Hill type was probably of ultimately African origin. In pigmentation it was probably dark. Either as a result of the long-continued sojourn in the Northern European latitudes or because of an instability brought about through crossing with other types of man, or through both causes, a process of depigmentation began to affect this type, particularly in the Baltic area. This depigmentation leading to blondism and erythrism may be regarded as an effect of the segregation of recessive elements due to race mixture, rather than as a mutation. The fostering of this recessive strain of blond or red-haired, fair-skinned people, was almost certainly the result of the damp, sunless, non-pigment-producing climate of the glacial period and the glacial retreat in Europe. It is reasonable to attribute this process of depigmentation pri-

marily to mixtures of the Galley Hill type with other types, both because of the antiquity of the Galley Hill type in the region, and because there is no reason for believing that such a process of depigmentation has affected to any considerable degree the few British survivors of the pure Galley Hill type; neither has it affected the Lapps, who seem closely related to the original Mongoloid invaders with whom the Galley Hill people crossed.

The most outstanding features of the craniology of the blond race called Nordic are the compressed malars, excessively long faces, and long, narrow, and high-bridged noses. One looks in vain for this combination of cranial features in any of the most ancient types of man. The similarly dolichocephalic, leptoprosopic, and leptorrhine Mediterranean type cannot, in its facial peculiarities, be traced to any known Palaeolithic progenitor. It would seem either that the dolichocephalic leptorrhines are a recent development, or that their ancestors inhabited some portion of the world from which no Palaeolithic human remains have been recovered. There is a third possibility, however, not seriously contemplated by the present writer until the study of the Guanche series led to an examination of the cranial characters of some of the supposedly pure Nordic peoples. It is by no means certain that the Nordic race is not of composite origin, due to the mixture of two or more primitive stocks and the selective action of environment upon the various combinations of characters in the hybrids.

The most primitive long-faced human stock that we know is the Neanderthaloid. The upper facial index of the La Chapelle-aux-Saints cranium is 56.2, and that of the Gibraltar skull 55.7. Both are frankly leptene. The Broken Hill skull, recently discovered in Rhodesia, has a very long face and compressed malars, and is certainly leptene also. That it has Neanderthaloid affinities is unquestionable. Great facial length relative to the bizygomatic breadth is characteristic of all of the great anthropoid apes, and especially of the gorilla and the chimpanzee. It is true that the great facial length of the Simiidae is largely connected with their extreme prognathism; but this great facial length is preserved without the extreme prognathism in both the Gibraltar and the Broken Hill crania. The only anthropoid ape which shows a strong tendency toward prominent and large malars is the orang-utan, and in conformity with this tendency the zygomata of the orang-utan are bowed outward, whereas such is not the case with the gorilla and the chimpanzee. Chimpanzees and gorillas have compressed zygomata and malars. Leptene faces are therefore anthropoid characters. Although it is not possible to compare the nasal index of the Simiidae directly with that of the Hominidae, it is nevertheless true that the anthropoids are without exception pronouncedly leptorrhine. With the exception of the gorilla they lack nasal bridges, but the nasal skeletons are in every case long and narrow. Finally it may be noted that the anthropoids without exception have hypsiconch (relatively high) orbits. Absolutely and relatively long faces and hypsiconch orbits are also Neanderthaloid, but in this race the nose tends to be platyrrhine. It appears that there is more evidence in favor of the view that platyrrhine noses are specialized developments than that leptorrhine noses are recent

and specialized developments, and, similarly, it is clear that a short and broad face is less anthropoid and more specialized and specifically human than a long and narrow face.

Let us assume a cross between the Galley Hill type and the Neanderthaloid type, in which the Galley Hill type of brain-case survived as did Neanderthaloid facial and orbital proportions, with a dominance also of leptorrhiny, brought about by the retention of the moderate nasal breadth of the Galley Hill type and the elongation of the facial skeleton consequent upon the lengthening of the face. Such a cross would produce a cranial type indistinguishable from the Nordic. The only modern features of the Nordic face are its elevated nasal bridge, collapsed maxillary sinus, palate narrowed through atrophy, recessed alveolar portion of the jaws, and prominent chin. If we admit the elevation of the nasal bridge through the adaptation of the respiratory function to a northern climate — a very dubious hypothesis — there is no reason for rejecting as a possibility the origin of the Nordic race through a Galley Hill Neanderthaloid cross. Certainly these latter races were contiguous throughout the Middle Palaeolithic period, and experience justifies the generalization that no human races fail to intermingle under conditions of propinquity. Since the Neanderthaloid race apparently did not reach England, it is natural and inevitable to suppose that such Galley Hill-Neanderthaloid crossings came about mainly in the north of the area which is now France, the Lowlands, and Northern Germany; for the ancient Galley Hill type of man seems to have been concentrated earliest in the British Isles. Possibly the environment of the North Sea and Baltic coast would tend to select as the surviving type of such a cross, relatively unpigmented individuals in whom, as to hair-form, the recessive red pigments were homozygous. Such erythrism and blondness might be intensified both by social and by environmental selection. If environment alone is to be taken as the cause of the depigmentation of the Nordic race, judging from the antiquity of blondism in North Africa and the persistence of heavily pigmented conditions among the Sub-Arctic dwelling Mongoloids, there would be scarcely enough time between the end of the Palaeolithic period and the historical record of blond Libyans in North Africa to produce and stabilize a relatively unpigmented race.

The antiquity of the Neanderthaloid and Galley Hill types in the regions adjacent to the centre of distribution of blondism makes them the most probable subjects for a long-continued operation of depigmentizing climatic factors. If, on the other hand, the blondism is rather due to the selective operation of the Northwestern European climate upon relatively unpigmented hybrid individuals, we again have as the two types of great antiquity, in the region where these cases might be expected to operate, the Galley Hill and the Neanderthaloid races.

Another possibility with respect to the origin of the Nordic race is that it is the result of a cross of the fundamental Galley Hill type with the fully developed dolichocephalic, leptoprosopic, and leptorrhine Mediterranean type. The hybrid due to such a cross might be expected to show an excessive facial length. Opportunities for such crossing were abund-

ant at the beginning of the Neolithic period in Europe, when Mediterranean race peoples came into that continent from Africa in great numbers. This hypothesis places a somewhat greater burden upon the climatic factor for depigmentation, owing to the far shorter time which it allows for the process. Furthermore it does not seem that the intermingling of the Galley Hill and Mediterranean races in England has resulted in a production of the Nordic type, which apparently was a late arrival in the British Isles.

Finally there is the possibility that the Nordic type may have developed directly from the Galley Hill type, or some very similar type, without intermixture somewhere outside of Europe, possibly on the Asiatic steppes. One of the difficulties of this theory is the concentration of blondism in historic and probably also in prehistoric times in the Baltic area. Moreover the argument of Tacitus with respect to the indigenous origin of the Germans seems not without cogency:

> Quis porro, praeter periculum horridi et ignoti maris, Asia aut Africa, aut Italia relicta Germaniam peteret, informem terris, asperam caelo, tristem cultu aspectuque, nisi si patria sit? [1]

Until it can be established that centers of original blondism exist or have existed outside of the Baltic area, the origin of the blond race in any other area cannot be successfully maintained. And until it can be shown that climatic factors in the Balkan area operate to produce human depigmentation as in no other part of the world, the blondism of the Nordics can hardly be attributed to environment alone. That erythrism and blondness in the case of the Nordic race are due to segregation of weak pigmentation and recessive red pigmentation, as a result of race mixture, and that the Baltic area tends to exert a selective influence in the perpetuation of such lightly pigmented stocks, seem highly probable.

I am not willing to commit myself definitely to the Galley-Hill-Neanderthaloid hypothesis of Nordic origins, nor to the Galley-Hill-Mediterranean theory, nor to the theories of derivation from unmixed Mediterranean or Galley Hill stocks. But I am strongly of the opinion that the Nordic race owes its origin to race mixture between two long-headed stocks, at least one of which had a long and narrow face. In this connection it is worthy of note that Dixon considers the Nordic race to be due to a cross between dolicho-chamae-leptorrhine stocks (Mediterranean) and dolicho-hypsi-leptorrhine stocks (Caspian).

The origin of the Alpine race. The first brachycephalic immigrants into Europe were probably strongly Mongoloid. The possibility of the origin of the modern Alpine race through a cross between dolichocephalic, leptoprosopic, leptorrhine Mediterraneans, and brachycephalic, euryprosopic, platyrrhine Mongoloids, is worthy of consideration. In such a cross we should expect a dominance of brachycephaly and of leptorrhiny, with considerable variability of the length-height index and of the facial indices.

The origin of the Dinaric race. The so-called Dinaric race, with its tall stature, brachy-hypsicephaly, and with its leptoprosopic face and Armenoid nose, is probably due

[1] Tacitus, Germania, Chap. 2.

to a mixture of the tall, dolichocephalic, leptoprosopic Nordic, and the short, brachy-hypsicephalic, long-nosed, Armenoid type. It is quite possible that Alpine hypsicephaly may also be due to infusions of this stock in a Mediterrean-Mongoloid mixture. But we should not expect Armenoid admixture to occur without leaving in its wake clear traces of the apparently dominant Armenoid nose. The presence of the epicanthic fold as a temporary and infantile phenomenon in a large percentage of Alpine European children is probably to be interpreted as a trace either of an ancient Mongoloid strain in the Alpine race or of a recent Mongoloid admixture.

Race and environment. It is no longer possible to argue that the many clearly distinct modern races of man are the result of some miraculous process of environmental differentiation carried on throughout ages in theoretical areas of geographical isolation. From early prehistoric times physically diverse types of men have intermingled their blood and their cultures. Favorable combinations arising from such hybridism have resulted in the establishment of new races and new cultures, especially where the fusion has been complete and where environment has operated selectively. There is probably not one fundamental human character which owes its origin solely to environment. Environment selects and sorts mutations and the combinations of hereditary characters; it may determine survival or extinction. Environment moulds and modifies, but it never creates. Logic inevitably leads from this point to the conclusion that the modern races of man have arisen from the selective action of environment upon the various mixtures of several fundamental human stocks which had evolved from distinct though related anthropoid ancestors.

APPENDICES

APPENDIX A

NOTES ON THE EXPLORATION OF SOME GUANCHE BURIAL CAVES IN TENERIFE

Cave at La Punta, San Andres

Explored July 11, 1915

I received information as to the whereabouts of a Guanche burial cave through Fernandez Hurjillo, a young jeweler of Santa Cruz, who had himself visited the cave and removed some skeletal material. This I acquired from him, and on the morning of July 11 he conducted me to the place.

The cave is situated 200 meters south of the village of San Andres, immediately above the carriage road which runs along the seashore from Santa Cruz to that village. The cave is a natural excavation in a perpendicular face of rock, about 15 meters above the carriage road and about 30 meters above the sea. Unfortunately I was unable to take measurements, because of the fact that my boxes containing tapes had not yet arrived.

We were able to reach the entrance by means of two ladders tied together, which were procured from the village. The cave is about 5 meters wide at the mouth, narrowing to 3 meters at the back. The depth is about 5 meters. At the entrance the height from roof to floor is almost 4 meters, and from this point it slopes downward to a height of 1 meter at the back.

The uneven rocky floor was strewn with human bones to a depth of 10 cm.–20 cm. The skeletal remains were, however, confined to the front half of the cave floor. The back part of the cave floor was quite clear of debris and we were informed by a native that the bodies had originally been piled in the back of the cave.

An Austrian is said to have removed over fifty skulls and some mummies. This is by no means improbable, considering the mass of skeletal material still remaining.

The cave was in such condition that no archaeological observations were possible. I was obliged to content myself with examining the hopelessly confused heap of bones and with collecting such as might be of value for purposes of study. It was clear that the cave had been the burial place of many persons; for 26 more or less fragmentary skulls were found in the debris, in addition to facial parts of several others. There were also 31 complete and many fragmentary mandibles. None of these mandibles belonged to the skulls which were recovered. In addition to other skeletal parts 104 tibiae, 77 femora, and 82 humeri were collected. It was impossible to remove all the skeletal remains, partly because of the interference of civic authorities, and partly because of the bulk of the debris. I should estimate the amount of skeletal material brought away as about one-half of that on the floor of the cave. Care was taken to collect all skull fragments. At a minimum estimate 50 individuals are represented in this material, but it is far more probable that partial remains of more than 100 persons are included. Originally there must have been buried in this cave at least 100 people; for unquestionably the Austrian who is responsible for the looting of the cave in the first instance removed from it all the best specimens.

The bones are in an excellent state of preservation and many of the bodies must have been embalmed, since pieces of flesh and skin, obviously treated with some resinous preservative, still adhere to the bones. Several pieces of goatskin mummy-wrappings were recovered, one of which shows a skillfully sewn seam (Plate 13, fig. 1). One perforated shell ornament was found, and on the floor of the cave were many twigs and sticks, which may originally have been spread as a layer under the bodies.

It is greatly to be regretted that the person who discovered this cave did not properly record it. It is of course possible that the original looters were natives, who habitually destroy or carry off Guanche remains which they chance to find.

Under my supervision the floor of the cave was carefully cleaned for observation and the skeletal material which was left in the cave was sorted and piled. Only a few centimeters of cave earth covered the rocky floor, and it is improbable that the place had ever been used as a habitation.

Cave in Bco. de San Andres

Explored July 16, 1915

The bed of the *barranco* was followed inland from the fishing village of San Andres for about half a mile. From that point two and a half hours of hard climbing brought us to a rock shelter near the top of a peak, southwest of the village. The opening of this small shelter looks toward the sea and is nowhere more than 1 meter in height. The whole shelter was 1 meter–1½ meters deep and 4 meters wide. The roof was 1 meter high at the entrance, and 30 cm. high at the back. The mouth of the shelter was almost blocked with cactus. A pile of stones extended along the opening and it is probable that the place had been used at some time for a goat pen. The floor was covered with 20 cm.–30 cm. of earth and goat guano, with many stones scattered about. Here and there under the stones fragmentary human bones were to be found. The guide admitted that the cave had been visited some years before by a German, who doubtless removed most of the skeletal material. One basalt scraper was found on the floor but an hour's investigation revealed nothing of importance (Plate 6, fig. 2). The place probably never contained more than one or two burials, and it has been thoroughly searched.

Montagna de Taco

Partially explored, July 13, 1915

Montagna de Taco is a cinder cone, 368 meters high, between the Guimar road and the sea, about 4 kilometers south of La Cuesta. The Benitez private collection of Guanche antiquities contains several skulls from this site, and it seemed worth a reconnaissance. A boy from a neighboring house, who claimed to know of the existence of caves in the cone, was obtained as a guide. A new road had been recently built from the Guimar highway to the cinder cone, and it was apparent that most of the caves had been used to obtain cinders for road making.

In a small *barranco* on the seaward side we came upon human remains lying in the loose earth which partially filled a large niche, made by the angle of two faces of rock. Thinking that this might be the blocked-up entrance of a cave I cleared away the loose earth down to the solid rock, without finding anything except a few scattered and fragmentary bones of a child and an adult. I cannot account for the presence of these remains except by the supposition that they were thrown there after having been taken from a burial somewhere on the cone.

Nearby, to the north, was a cave in a very soft volcanic deposit. This was almost filled with cinders and volcanic scoriae from the roof, and from a chute which led up to the hill crest. Exploring this cave I found no signs of human remains and did not think that it would repay excavation, because of its recent appearance and because of the very soft material of which the walls and roof were formed. It seemed to me improbable that this was a Guanche burial cave. The boy did not know of other caves in the vicinity and no other guide was procurable.

Bco. de las Higueras, Chorillo

Partially excavated July 22, 1915

Barranco de las Higueras, Chorillo, opens into the sea just south of Punta Guadamojete, about 9 kilometers south of La Cuesta on the Guimar road. The caves are on the south side of the *bar-*

ranco, just below an abandoned Spanish road which formerly led to Candelaria. There is a large cave about 20 meters below the edge of the *barranco* and a very small one about two meters below

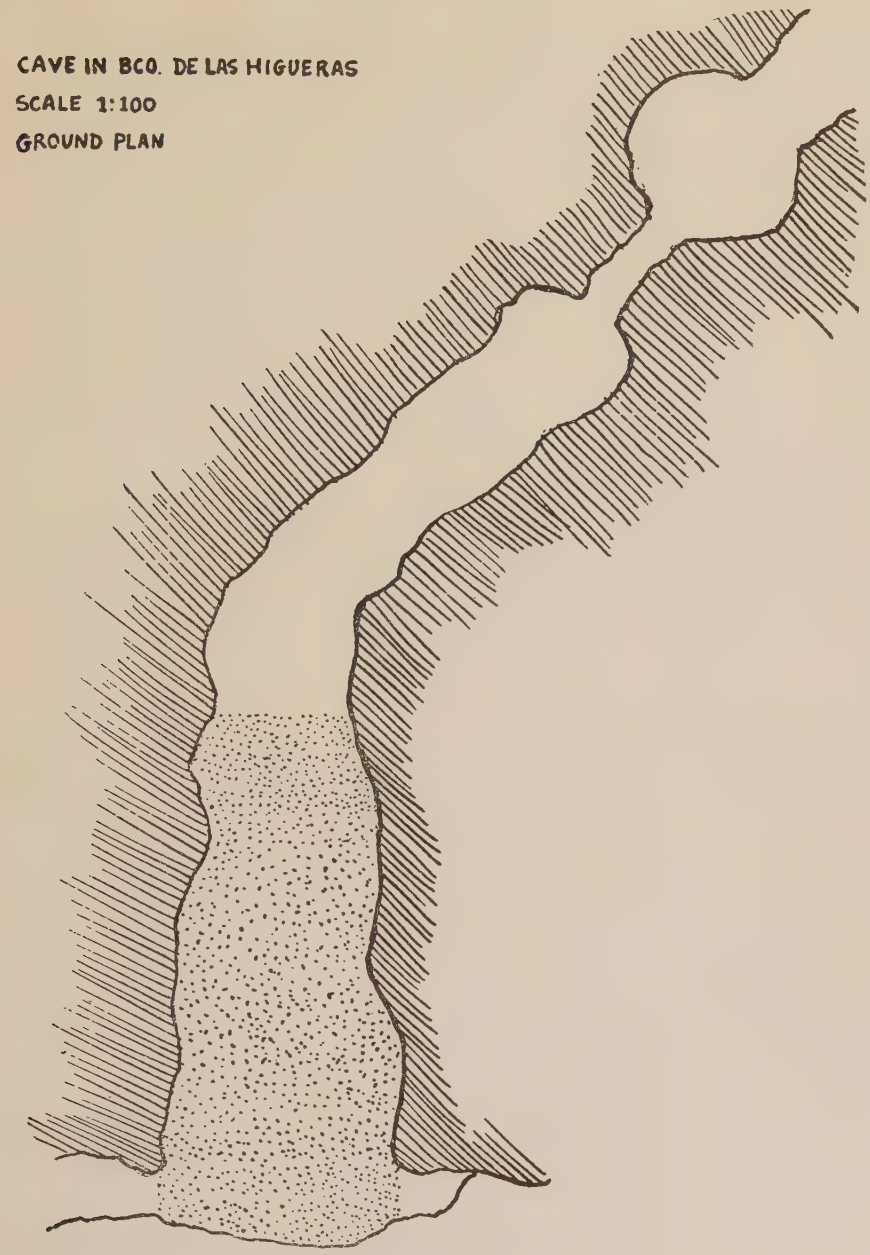


FIG. 32

the top of the slope. The caves were shown me by natives on July 13, and I investigated them more fully on the 22nd.

The larger cave is a lava tunnel extending, it is said, for miles. The greatest height of the cave entrance was only 1.40 meters before excavation and there were 50 cm. of cave deposit before bed rock was reached. The breadth of the cave mouth was 3.05 meters. The cave extended straight back

for 7.50 meters and then turned to the right at an angle of about 30°. At the turn the breadth was 1.80 meters and the height of the roof from the debris on the floor was 1.05 meters. From the turn to a point where the passage was almost blocked, the distance was 5.80 meters. At the end of this second segment, the height was 0.75 meter, and the breadth 1.80 meters. Beyond the first turn the floor of the cave was covered with boulders and brown cave earth. At the end of the second segment the floor of the cave sloped sharply upward, and the passage was narrowed to a chute 0.75 meter wide and 0.50 meter high, which extended for 2 meters and was almost blocked at the top by a loose boulder. Beyond this the cave opened out into a circular chamber with a vaulted roof 1.50 meters high and 2.50 meters in diameter. The floor was strewn with boulders lying in the loose cave earth, of which there were a few centimeters on the rock floor. Two fragmentary human bones lay on the surface, but nothing of importance was found. Beyond this chamber the roof of the cave was about 0.50 meter high and the passage was 1.50 meters wide. After extending for 2 meters it again turned sharply to the right. At this point, since I did not consider it profitable, the exploration was discontinued.

The excavation of this cave was begun outside of the entrance and carried in for a distance of about 5 meters. At the mouth there was a layer of loose earth 50 cm. deep lying on the rock. Scattered through this loose earth were toe bones, teeth, etc. At the depth of 20 cm., directly under the middle of the cave entrance a basalt flake was found. On the left side of the entrance of the cave pieces of a human skull appeared at the depth of 25 cm. Nothing of importance was discovered inside of the cave. Apparently the human remains had been laid on the surface, for there was no sign of interment in any of the part excavated. Many fragmentary bones lay on the surface or under boulders which had fallen from the roof. The workmen stated that many skulls had been taken from the cave. At the close of the day the excavation was abandoned as useless.

Los Pilones Cave, July 28, 1915. (Los Pilones A)

Los Pilones was a small cave about halfway up the south side of the barranco Los Pilones de Tejina, two miles from the sea. The entrance to the cave was 2.0 meters wide and 0.75 meter high in the highest part. The cave was roughly circular, about 4 meters in diameter and 1 meter in height. The floor was covered with a level layer of pebbles which had fallen from the roof. At the entrance several bones were lying in a heap among the pebbles and large stones. A native had taken the skull home, but had returned it again to the cave, because his wife objected to its presence in the house. Beyond this disturbed burial the cave yielded nothing. The skeletal remains consisted of the complete cranium of a middle-aged man, the right and left ilia, fragmentary sacrum, right femur and right tibia. The skull is distinctly reminiscent of the Cro-Magnon type (Plates 22, 23), while the long bones indicate that the stature must have been medium.

Barranco Baranda

Cave explored July 29, 1915

The cave described here is situated an hour-and-a-half's ride by mule, above Hoya Grande, half way down the west slope of the very deep Barranco Baranda. There are two entrances. On the right is an opening large enough for a man to crawl through; this leads into a low, narrow tunnel, which extends for 3 meters and then turns sharply to the left, forming an almost rectangular chamber 5 meters across and 2 meters deep. The height of the cave is everywhere less than a meter. Access to the chamber may also be gained from an outer grotto which opens to the left of the small entrance and extends into the face of the *barranco*, parallel to the small tunnel. (Plate 5, fig. 1.) At the back of this grotto is a small opening leading into the cave chamber. This opening was enlarged sufficiently to permit access. (See fig. 33.)

This cave had been disturbed; some of its contents had been removed, and the rest was thoroughly confused. The bones lay under and among the stones, which from time to time had fallen

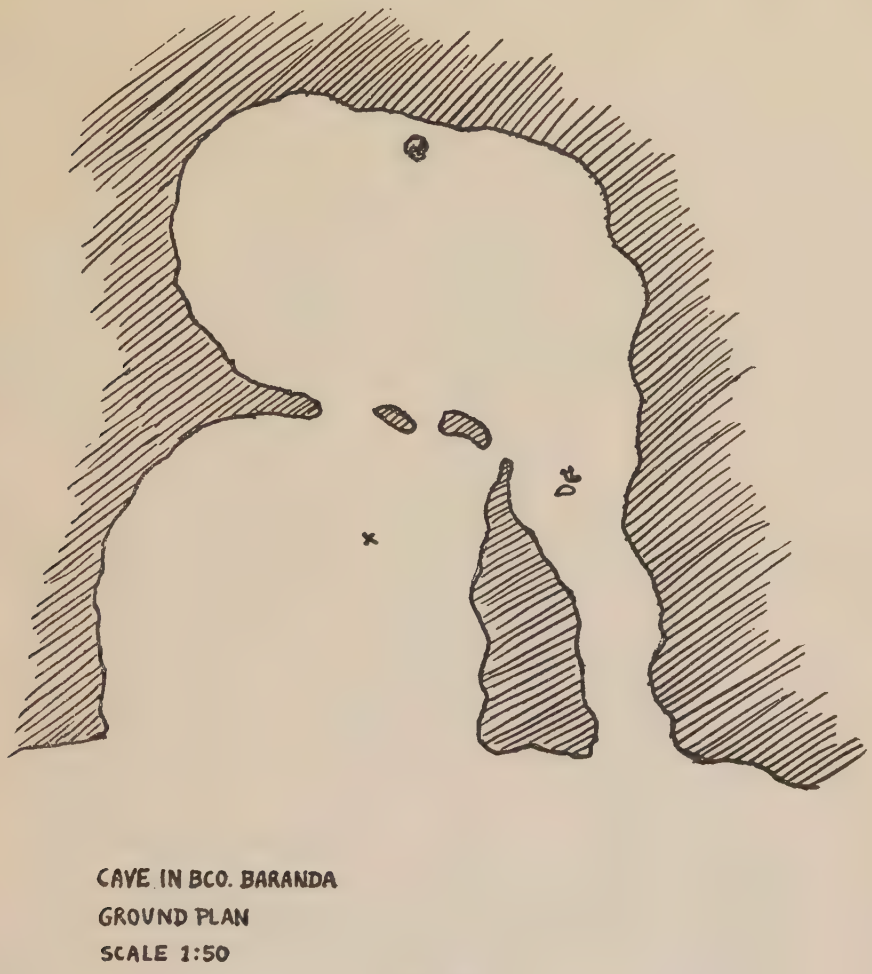


FIG. 33

from the roof. Two meters up the tunnel were found in a heap 4 mandibles, and the fragments of a child's cranium. At the back of the cave chamber was found the complete calvarium of an adult female (Plates 30, 31). At the point where the grotto communicated with the cave chamber the bones of a child's foot were found. The cave was thoroughly investigated but yielded nothing further of importance. Originally at least eight individuals must have been buried there.

List of specimens found:

4 odd mandibles.
1 calvarium of adult female.
1 fragmentary cranium of 5-year-old child.
1 infant.
1 adolescent.

The remains were for the most part in a fragmentary condition.

Burial Cave in Barranco above Hoya Grande (Hoya A)

On the morning of July 27, 1915, a boy brought a Guanche skull to the office of Fyffes Ltd., Hoya Grande. The cave from which this skull was obtained was a two hours' mule-ride north and a little east of the plantation house, in an accessible spot about halfway down the west slope of a shallow *barranco* called Barranco Hoya.

The skull was found at the entrance of the cave according to the boy's story, and the disposition of the other bones seemed to indicate that the body had been pushed into the cave feet first. The entrance was so small that it was necessary to enlarge it with a crowbar to enable the boy to crawl in. The cave itself was roughly circular, about 2 meters in diameter and 50 cm. high. (Plate 5, fig. 2.) The following bones were removed from the surface near the entrance: left femur, fragmentary right tibia, fragmentary right and left humeri, fragmentary right and left scapulae, fragmentary left clavicle. Two or three centimeters of cave earth covered the rock floor, but this yielded nothing except rodent bones. The burial had obviously been disturbed. The remains represent the skeleton of an old man of medium stature with a cranium that recalls the Cro-Magnon type, although it is rather small. The bones were very dry and must have been exposed to the air for a long time.

Valle de Santiago

July 30, 1915

About a mile below the small town of Tamaimo, in the Valle de Santiago, there is a looted burial cave, high up in the almost perpendicular west wall of the *barranco*. A small entrance leads into

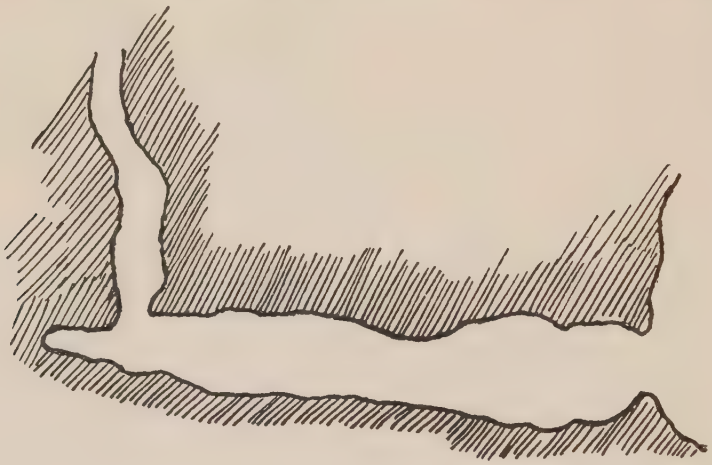


Fig. 34

a low, narrow tunnel, which extends about 7 meters into the face of the cliff. Near the end of the cave is a chute leading upward through the roof to the left; this chute gradually grows narrower so that it could not be climbed for any great distance. On the floor of the cave were many human bones, scattered in utter confusion. Fragmentary long bones and a mandible were found, but it was ap-

parent that the burials had been laid out on the cave floor, as was the usual custom, and had been subsequently removed. At the extreme end of the cave a small niche opens to the left. Here I found the fragmentary remains of an infant, with a large number of small dried berries.

FIG. 35

At several places in the cave excavation was carried down to bed rock, but no remains were encountered below the surface. The cave may originally have contained many burials, but it is in an easily accessible spot and has doubtless been known to the goatherds of the vicinity for many years.

Barranco de Tejina

Cave explored August 2, 1915

News of the discovery of this cave was brought to Hoya Grande on the morning of August 2, and at once we set out to investigate it. Arriving at the small hamlet of Tejina, we ascertained that the civil guards of the district had forbidden the removal from the cave of any objects. We were therefore unable to excavate.

The cave itself is situated twenty minutes' climb above the hamlet, about halfway up the northwest slope of the *barranco* in an easily accessible place. Entrance was effected through a small chute

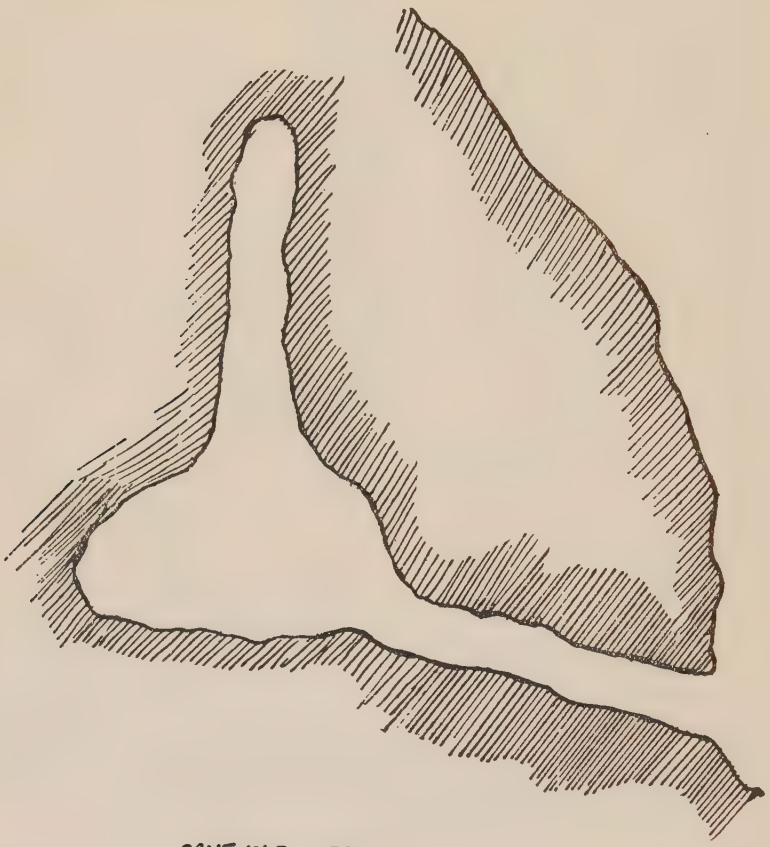


Fig. 36

leading upward for two meters. The cave then opens out into a chamber two meters wide, three meters long and one and one half meters high, to which access may also be had by descending a cleft in the rock opening into the right side of the chamber from above. Lying on the bed of cave earth which covered the floor of this small cave, was the skeleton of an adult, probably a male, buried in the extended position and with all of the bones in anatomical relation. The length of the skeleton

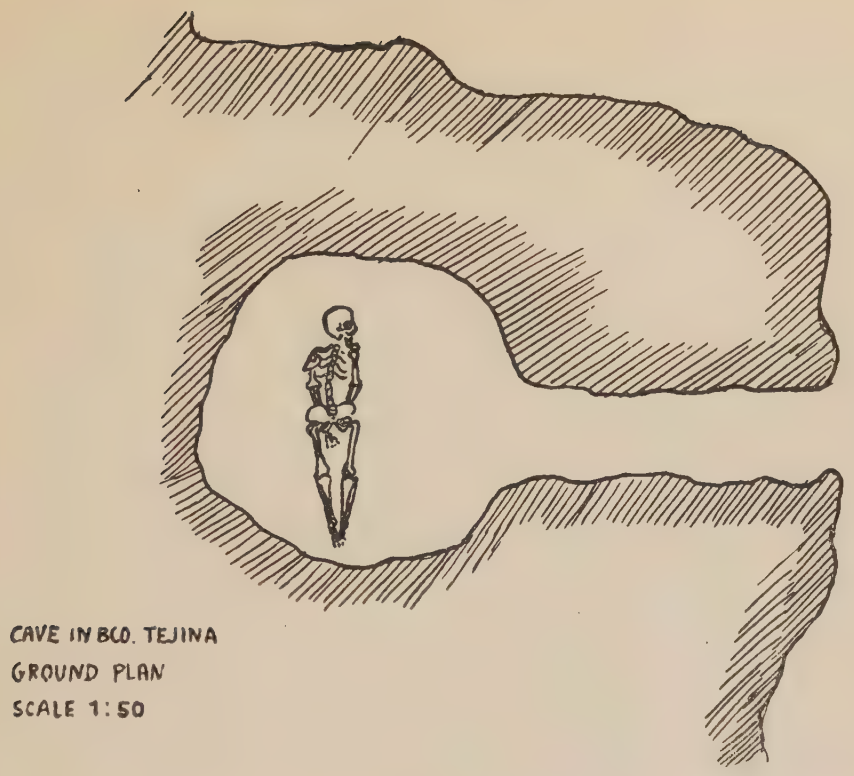


FIG. 37

in situ was 1.45 meters. There were no arms or implements of any kind on the surface of the cave, nor was there any trace of clothing. The bones were in an admirable state of preservation. Careful measurements and plans were made of this burial chamber and the skeleton was left untouched.

APPENDIX B

TABLE I. — MEASUREMENTS OF TENERIFE CRANIA. MALE

(Collection of the Municipal Museum of Santa Cruz de Tenerife)

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
1	Chorillo[1]	middle	181	140	136	152.3	100	(72)	130	33	36	41	41	58	25	(88)
2	"	young	189	140	136	155	92	65	128	32	32	40	38	52	26	90
3	"	middle	190	140	139	156.3	96	75	137	37	36	42	45	52	25	100
4	"	middle	189	148	?	?	95	78	143	34	34	41	41	54	26	?
5	"	middle	185	134	136	151.6	93	70	134	32	34.5	45	42	50	21.5	94
6	"	middle	186	140	137	154.3	100	70	(138)	34.5	35	41.5	41.5	52	26	101
10	"	old	184	145	?	?	92	62	?	30	30	37	37	46	25	?
11	"	old	189	143	130	154	92	69	132	30	30	41.5	39	48	19.5	95
7	"	young	180	140	131	150.3	100	70	124	35	37	42	41	51	26	89
12	"	old	185	144	135	154.6	92	70	?	32.5	31.5	38	38	51	24	89
13	"	middle	179	136	135	146.6	101	71	128	33	32	41	41.5	51	24	98
16	"	young	195	146	137	159.3	100	70	?	36.5	38.5	40	39.5	54	26	101
17	"	middle	189	138	135	154	90	74	(143)	33	34	41	40	53	21.5	102
18	"	young	179	137	129	148.3	95	68	?	30	31	37	37	48	24	94
19	"	young	187	144	135	155.3	89	80	129	33	33	38	39	57	26	97
21	"	middle	185	144	134	154.3	91	73	?	34	34	39	38.5	51	24	98
22	"	young	181	149	129	153	96	68	137	32	32	36	36	49	24	87
26	"	young	181	138	134	151	93	72	(130)	35	35	40	40	53	20	98
27	Chorillo[2]	old	183	141	130	151.3	94	?	126	33	33	40	37	50	27	(85)
29	"	old	194	142	137	157.6	102	(74)	135	30	31	41	40	50	25	(96)
30	"	young	185	142	134	153.6	98	67	128	30	31	39	39	46	24	92
31	"	middle	177	142	?	?	95	66	125	35	36	39	39	50	25.5	?
33	"	young	180	135	127	147.3	97	61	123	30	32	39.5	38	46	23	90
35	"	young	185	142	138	155	90	(67)	132	29.5	29.5	37	36	51	23	86
36	"	middle	189	145	?	?	99	(70)	130	29	30	37	36	46	26	?
38	"	middle	183	142	128	151	91	74	140	33.5	34	?	40	53	23	97
39	"	middle	186	148	138	157.3	97	(74)	?	?	?	?	41	54	27	(89)
40	"	young	195	144	129	156	99	68	135	31.5	31	36	37	50	24.5	96
41	"	old	194	148	135	159	96	(72)	137	34	34	41	41	52	25	(88)
42	"	middle	192	146	135	157.6	95	76	135	31	32	38.5	39	57	21.5	92
45	"	middle	190	154	136	160	(77)	76	145	37	36	42	44	56	25	92
47	"	middle	186	142	132	153.3	101	72	139	33	33	39	40	53.5	22.5	95
53	"	middle	184	142	135	153.6	91	70	136	35	35	41	41	50	25	88
54	"	young	192	146	123	153.6	99	66	?	34	35	39	39	48	20	89
56	"	middle	198	150	133	160.3	105	(73)	142	34	33.5	44	43	54	27	100
57	"	young	184	148	135	155.6	95	70	136	32	32.5	38	38.5	49	24	91
60	"	middle	?	144	138	?	101	(77)	?	34	36.5	43	42	56	27	105
61	"	old	184	145	137	154.3	98	?	126	34	35	41	40	50	28	93
62	"	middle	182	137	134	151	96	66	130	33.5	33	39	38.5	50	24	92
63	"	old	188	140	130	152.6	97	68	(130)	34	35	38.5	38.5	47	21	(94)
64	"	middle	183	136	136	151.6	95	70	(120)	34.5	33.5	38	38	57	22	93
66	Bco. Hon.[3]	old	182	140	129	153.6	91	67	132	33.5	34	40	40	51	24	94
67	"[4]	middle	185	143	123	150.3	95	73	133	36	36.5	39.5	39	56	24	98
68	"	middle	186	137	133	152	96	(72)	133	33	33	38	39.5	50	23	90
74	Arafo	middle	185	134	129	149.3	96	65	134	29.5	31	41	38	48	26	98
76	Candelar.[5]	old	181	141	?	?	95	66	125	35	33	41	39.5	53	23	?
78	"	old	197	155	(119)[5]	157	91	70	140	36	34	40	41	50	22	103
80	"	young	181	136	?	?	95	70	129	31	30	39	40	53	23	?

[1] "Cráneos encontrados en el Chorillo en la cueva de Los Muertos ó de Taco á orillas del mar. Comision del corresponsal de Chorrillo S. Camilo Delgado y Sñes. socios D. Juan Bethencourt y D. Antonio Domingue."

[2] "Encontrados en el Chorillo en la cueva de Lanea ó Roque." Comision as Note 1.

APPENDIX B

TABLE I. — MEASUREMENTS OF TENERIFE CRANIA. MALE

(Collection of the Municipal Museum of Santa Cruz de Tenerife)

ion-sion y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion-Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right	Orbital Index Left	Nasal Index	External Palatal Index
05	51	64	516	366	305	31×35	77.35	75.14	97.14	(55.38)	(83.81)	80.49–87.80		43.10	125.49
99	52	63	527	377	305	39× ?	74.07	71.96	97.14	50.78	90.91	80.00–84.21		50.00	121.15
04	57	64	529	380	312	37×28	73.68	73.16	99.29	54.74	96.15	88.10–80.00		48.08	112.28
?	57	65	531	383	310	?	78.31	?	?	54.54	?	82.93–82.93		48.15	114.04
06	52	64	512	360	301	43×36	72.43	73.51	101.49	52.24	88.68	71.11–82.14		43.00	123.08
02	59	68	525	380	302	40×31	75.27	73.66	97.86	(50.72)	99.02	83.13–84.34		50.00	115.25
?	56	69	521	?	?	?	78.80	?	?	?	?	81.08–81.08		54.35	123.21
98	54	64	532	?	305	?	75.66	68.78	90.91	52.27	96.94	72.29–76.92		40.62	118.52
94	53	63	515	373	312	34×29	77.78	72.78	93.57	56.45	94.68	83.33–90.24		50.98	118.87
92	52	64	528	?	311	?	77.84	72.97	93.75	?	96.74	85.53–82.90		47.06	123.08
01	53	65	506	359	302	37×34	75.98	75.42	99.26	55.47	97.03	80.49–77.11		47.06	122.64
03	?	67	544	384	322	42× ?	74.87	70.26	93.84	?	98.06	91.25–97.47		48.15	?
06	58	71	526	?	?	36×29	73.02	71.43	97.83	(51.74)	96.23	80.49–85.00		40.56	122.41
96	51	58	501	361	294	?	76.54	72.07	94.16	?	97.92	81.08–83.78		50.00	113.73
04	55	66	526	379	303	41×38	77.01	72.19	93.75	62.02	93.27	86.84–84.62		45.61	120.00
02	53	70	522	368	308	36×32	77.84	72.43	93.06	?	96.08	87.18–88.31		47.06	132.08
97	47	62	528	368	315	37×31	82.32	71.27	86.58	49.63	89.69	88.89–88.89		48.98	131.91
02	53	66	?	362	?	39×31	76.24	74.03	97.10	(55.38)	96.08	87.50–87.50		37.74	124.53
98	?	?	517	368	300	36×30	77.05	71.04	92.20	?	(86.73)	82.50–89.19		54.00	?
03	58	62	536	375	309	40×31	73.20	70.62	96.48	(54.81)	(93.20)	73.17–77.50		50.00	106.90
94	55	65	519	387	296	36×32	76.76	72.43	94.37	52.34	97.87	76.92–79.49		52.17	118.18
?	51	61	511	360	301	?	80.23	?	?	52.80	?	89.74–92.31		51.00	119.61
98	49	57	502	361	293	35×33	75.00	70.56	94.07	49.59	91.84	75.95–84.21		50.00	116.33
99	(52)	60	519	383	312	34×32	76.76	74.59	97.18	(50.76)	86.87	79.73–81.95		45.10	(115.38)
?	54	65	532	?	302	?	76.72	?	?	(53.85)	?	78.38–83.33		56.52	120.37
03	55	66	520	351	295	40×31	77.60	69.95	90.14	52.85	94.17	? –85.00		43.40	120.00
05	50	65	529	375	316	35×33	79.57	74.19	93.24	?	(84.76)	?	?	50.00	130.00
97	55	63	544	384	297	39×30	73.85	66.15	89.58	50.37	98.97	87.50–83.78		49.00	114.55
00	?	?	547	390	308	39×33	76.29	69.59	91.22	(52.59)	(88.00)	82.93–82.93		48.08	?
03	55	64	529	376	312	38×32	76.04	70.31	92.47	56.30	89.32	80.52–82.05		37.72	116.36
04	53	66	549	383	322	36×33	81.05	71.58	88.31	52.41	88.46	88.10–81.82		44.64	124.53
07	51	68	526	354	300	40×33	76.34	70.97	92.96	51.79	88.79	84.62–82.50		42.05	133.33
99	53	66	524	370	303	41×30	77.17	73.37	95.07	51.47	88.89	85.37–85.37		50.00	124.53
96	49	66	541	375	312	39×30	76.04	64.06	84.25	?	92.71	87.18–89.74		41.67	134.69
02	58	67	556	396	322	36×29	75.76	67.17	88.67	(51.40)	98.04	77.27–77.90		50.00	115.52
01	47	63	530	369	312	38×34	80.43	73.37	91.22	51.47	90.10	84.21–84.42		48.98	134.04
13	61	71	?	?	?	?	?	?	95.83	?	92.92	79.07–86.90		48.21	116.39
03	?	?	530	367	314	42×34	78.80	74.46	94.48	?	90.29	82.93–87.50		56.00	?
03	50	59	507	356	295	38×32	75.27	73.63	97.81	50.77	89.32	85.90–85.71		48.00	118.00
05)	51	63	522	363	295	(33×32)	74.47	69.15	92.86	(52.31)	(89.52)	88.31–90.91		44.68	123.53
02	51	59	512	366	302	38×33	74.32	74.32	100.00	(58.33)	91.18	90.79–88.16		38.60	115.69
01	51	62	512	352	288	32×33	76.92	70.88	92.14	50.76	93.07	83.75–85.00		47.06	121.57
02	53	62	524	358	298	36×30	77.30	66.49	86.01	54.89	96.08	91.14–93.59		42.86	116.98
98	(53)	67	517	367	298	40×33	73.66	71.51	97.08	(54.14)	91.84	86.84–83.54		46.06	(126.42)
03	52	58	506	354	295	38×34	72.43	69.73	96.27	48.51	95.15	71.95–81.58		54.17	111.54
?	?	?	512	347	292	?	77.90	?	?	52.80	?	85.37–83.54		43.40	?
01	(55)	60	549	379	317	41×35	78.68	60.41	76.77	50.00	101.98	90.00–82.93		44.00	(109.09)
?	57	62	(505)	?	299	?	75.14	?	?	54.26	?	79.49–75.00		43.40	108.77

[3] "Cráneos encontrados en distintas cuevas de Barranco Hondo." Comision Note 1.

[4] "Cráneos encontrados en distintas cuevas de Barranco Hondo. Comision las Sñes D. Camilio Delgado, corresponsal del Chorillo y S. Juan Bethencurt y S. Antonio Domingue."

[5] "Cráneos encontrados en el Barranco de la Hormigo en Candelaria. Comision de S. Juan Bethencourt y D. Antonio Domingue y el corresponsal de Candelaria D. Agustin Otazo." No. 78 is platybasic.

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height Right	Orbits: Height Left	Orbits: Breadth Right	Orbits: Breadth Left	Nasal Height	Nasal Breadth	Basion Alveol (x)
83	Candelar.[6]	old	187	149	132	156	96	(70)	137	31	33	36	36.5	53	23	89
85	"	young	179	(140)	125	148	96	72	?	32	33	39	39	54	23	97
88	"	old	193	148	129	153.3	98	73	146	36	36	41	41	49	26	97
91	Bco.[7]	middle	181	136	122	146.3	78	?	124	33	32.5	37	36	48	23	(90)
92	Infierno	young	190	150	134	158	101	73	131	34	34	37.5	37.5	52	24	93
94	Adeje	middle	185	141	133	153	93	73	137	33	33	38	37	53	22.5	90
95	"	young	186	147	132	155	98	74	127	33	33	39.5	39.5	53	23	93
96	"	old	183	148	137	156	99	(67)	135	33	33	39	37.5	50	28	93
98	"	old	184	136	133	151	92	65	126	30.5	31	37.5	37	46	22	87
99	"	young	180	137	130	149	89	70	126	34	34	35	36.5	52	24	(89)
100	"	young	188	145	132	155	99	72	127	36	36	42	42	52	24	93
105	Candelaria	middle	186	135	134	151.6	99	(66)	136	32	32.5	40	40	49	23	(93)
117	Candelar.[8]	young	188	146	131	155	95	73	132	36	35	42	42	53	22	97
118	"	young	185	140	129	151.3	90	76	133	39.5	39	44	?	55	26	94
119	"	young	192	151	149	164	102	76	137	31	32	41	41	55	26	95
120	"	middle	190	152	136	159.3	103	77	143	?	36	?	41.5	54	24	90
121	"	young	(210)[10]	(133)[10]	(145)[10]	162.6	100	74	136	32.5	32	41	43	55	26	97
122	"	young	193	144	138	158.3	105	69	138	35	35	41	41	51	27	99
123	"	young	189	143	129	153.6	95	72	130	34	34	41.5	41	53	23	93
124	"	young	200	150	140	163.3	99	71	139	32	32	42	40	50	26	95
125	"	young	197	152	141	163.3	101	62	133	32	32	39	39	47	25	87
126	"	young	187	145	131	154.3	97	68	130	33	33	41	42	50	23	95
127	"	young	190	143	134	155.6	91	70	134	31	30	40	40	52	26	100
128	"	young	185	141	131	152.3	93	71	132	32	31	39	39.5	52	24	92
130	"	middle	190	141	130	153.6	94	72	127	32.5	31	39.5	40	47	23.5	(93)
131	"	young	190	143	133	155.3	101	66	137	33	31	40	39	51	24	99
133	"	young	198	148	143	163	106	70	130	34	33	42.5	42	44	25	99
134	"	young	192	150	136	159.3	105	79	?	31.5	33	43	?	56	22	101
135	"	middle	184	144	133	155	93	71	125	31	31	37	35	52	24	92
136	"	middle	190	146	131	155.6	104	69	140	33	?	42	42	50	22	95
137	"	young	181	145	134	153.3	100	68	134	30	29	39	41	50	23	94
138	"	young	192	149	136	159	101	(70)	136	34	34	42	41	53	26	93
141	"	young	193	146	135	158	97	81	138	35	35	43	41	60	27	97
142	Candelaria	young	191	143	140	158	93	74	133	33	32	40	39	52	24	92
143	Imonce	young	196	155	139	160	106	77	140	34	34.5	45	42	57	26	98
144	en Can-	young	179	138	130	149	98	71	135	34	33	42	42	48	23	96
145	delaria[9]	young	199	155	142	165.3	105	70	136	31.5	32	43	40.5	53	25	90
146	"	old	177	145	125	149	102	74	131	34.5	35.5	43	41.5	52	26	88
147	"	young	191	147	131	156.3	98	70	134	31	31	41	41	54	24	92
148	"	young	183	139	123	148.3	102	68	132	34	35	40	38.5	51	26	87
149	"	young	187	143	130	153.3	102	64	132	30	30	38	38.5	48	23.5	90
150	"	old	195	149	136	160	92	77	131	35.5	36	40	40	55	26	95
151	"	young	185	154	129	156	98	68	141	37	36	42	42	50	24	95
152	"	young	185	145	128	152.6	98	69	135	34.5	33.5	39	41	52	25	87
153	"	middle	181	136	133	150	99	72	131	34	35	40	40	53	24	96
155	"	young	189	152	130	157	96	71	131	36	37	45	45	50	26	89
157	"	middle	180	143	128	150.3	99	65	132	34	32.5	44	44	48	24	97
158	"	young	189	148	132	156.3	102	74	135	33.5	33	41	39	53	26	97
159	"	old	182	143	124	149.6	98	70	130	33.5	33.5	43	42	50	25	96
160	"	middle	186	147	136	156.3	105	70	(139)	36	35	41	39.5	53	25	97
161	"	young	185	?	126	?	97	72	138	34	34.5	41	40.5	55	24	95
162	"	young	186	142	131	153	90	73	132	35	34	39.5	39.5	54	24	96
165	"	young	188	143	133	154.6	92	71	131	32	33.5	42	40	53	24	96
166	"	middle	181	144	122	149	91	70	127	32	33	42	41	51	26	90
167	"	old	186	145	129	150	105	(73)	137	32	31	40	40	56	25	100
168	"	young	190	(139)	129	152.6	98	76	?	35	35	43	?	55	26	91

[6] "Cráneos encontrados en la cueva del Almácigo en Igueste de Candelaria." Comision as Note 2.

[7] Skulls 91–96. "Encontrados por el corresponsal de Adeje D. Migu Fernandez."

sion-asion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right	Orbital Index Left	Nasal Index	External Palatal Index
00	?	?	523	375	311	37×29	79.68	70.59	88.59	(51.09)	89.00	86.11	90.41	43.40	?
00	55	64	?	349	292	37×29	(78.21)	69.83	(89.29)	?	97.00	82.05	84.62	42.59	116.36
00	59	(64)	544	380	308	38×32	76.68	66.84	87.16	50.00	97.00	87.80	87.80	53.06	(108.47)
95)	(54)	(55)	499	354	286	38×31	75.14	67.40	89.71	?	(94.74)	89.19	90.28	47.92	(101.85)
05	49	61	545	385	327	40×32	78.95	70.53	89.33	55.73	88.57	90.67	90.67	46.15	124.49
01	52	69	518	368	302	34×29	76.22	71.89	94.33	53.28	89.11	86.84	89.19	42.45	132.69
00	50	65	533	372	324	39×30	79.03	70.97	89.80	58.27	93.00	83.54	83.54	43.40	130.00
01	?	?	522	372	321	36×30	80.87	74.86	92.57	(49.63)	92.08	84.62	88.00	56.00	?
99	?	?	513	368	301	42×35	73.91	72.28	97.79	51.59	87.88	81.33	83.78	47.83	?
97	55	65	505	359	294	40×32	76.11	72.22	94.89	55.56	(91.75)	97.14	93.15	46.15	118.18
00	56	65	534	375	305	37×29	77.13	70.21	91.03	56.69	93.00	85.71	85.71	46.15	116.07
06	?	?	513	360	301	37×30	72.58	72.04	99.26	(48.52)	(87.74)	80.00	81.25	46.94	?
02	57	61	530	366	311	40×32	77.66	69.68	89.73	55.30	95.10	85.71	83.33	41.51	107.02
97	57	70	516	371	296	36×33	75.68	69.73	92.14	57.14	96.91	89.78	?	47.27	122.81
01	54	67	540	380	316	46×40	79.06	77.60	98.68	55.47	94.06	75.61	78.05	47.27	124.07
01	56	63	549	379	316	40×33	80.00	71.58	89.47	53.84	89.11	?	86.75	44.44	112.50
00	57	69	560	423	297	39×32	63.33	69.05	109.02	54.41	97.00	79.27	74.42	47.27	121.05
08	50	62	545	382	318	35×28	74.61	71.50	95.83	50.00	91.67	85.37	85.37	52.94	124.00
98	54	72	529	380	305	36×30	75.66	68.25	90.21	55.38	94.90	81.93	82.93	43.40	133.33
08	54	65	555	402	318	35×31	75.00	70.00	93.33	51.07	87.96	76.19	80.00	52.00	120.37
01	46	64	554	398	331	?	77.16	71.57	92.76	46.62	86.14	82.05	82.05	53.19	139.13
03	55	62	524	?	305	?	77.54	70.05	90.34	52.31	92.23	80.49	78.57	46.00	112.73
06	58	65	528	362	292	40×35	75.26	70.53	93.71	52.24	94.34	77.50	75.00	50.00	112.07
99	53	60	505	368	292	38×30	76.22	70.81	92.91	53.79	92.93	82.05	78.48	46.15	113.21
06)	56	54	520	375	305	41×31	74.21	68.42	92.20	56.69	87.74	82.28	77.50	50.00	96.43
04	54	68	533	365	313	39×34	75.26	70.00	93.01	48.17	95.19	82.50	79.49	47.06	125.93
05	58	68	552	?	330	?	74.75	72.22	96.62	53.85	94.29	80.00	78.57	56.82	117.24
08	57	66	543	372	322	40×35	78.13	70.83	90.67	?	93.52	73.25	?	39.29	115.79
99	55	63	519	366	303	34×31	78.26	72.28	92.36	56.80	92.93	83.78	88.57	46.15	114.55
00	?	?	535	370	310	45×39	76.84	68.95	89.73	49.28	95.00	78.57	?	44.00	?
01	52	64	519	361	315	34×33	80.11	74.03	92.41	50.75	93.07	76.92	70.73	46.00	123.08
01	54	67	(546)	390	311	35×30	77.60	70.83	91.28	(51.47)	92.08	80.95	82.93	49.06	124.07
04	56	65	540	385	(303)	36×30	75.65	69.95	92.47	58.70	93.27	81.40	85.37	45.00	116.07
02	51	64	529	?	303	?	74.87	73.30	97.90	55.64	90.20	82.50	82.05	46.15	125.49
08	56	72	560	385	322	40×32	79.08	70.92	89.68	55.00	90.74	75.56	82.14	45.61	128.57
97	59	65	505	346	291	45×33	77.09	72.63	94.20	52.59	98.97	80.95	78.57	47.92	110.17
00	51	66	558	410	346	41×31	77.89	71.36	91.61	51.47	90.00	73.25	79.01	47.17	129.41
89	52	65	514	375	301	32×27	81.92	70.62	86.21	56.49	98.88	80.23	85.54	50.00	125.00
02	52	64	538	381	312	40×29	76.96	68.59	89.12	52.24	90.20	75.61	75.61	44.44	123.08
93	53	66	525	366	296	37×31	75.96	67.21	88.49	51.52	93.55	85.00	90.91	50.98	124.53
97	51	63	526	376	312	38×31	76.47	69.52	90.91	48.48	92.78	78.95	77.92	48.96	123.53
05	54	66	542	376	316	41×30	76.41	69.74	91.28	58.78	90.48	88.75	90.00	47.27	122.22
97	53	68	538	366	322	41×35	83.24	69.73	83.77	48.22	97.94	88.10	85.71	48.00	128.30
94	50	64	527	372	303	37×31	78.38	69.19	88.28	51.11	92.55	88.46	81.71	48.08	128.00
05	52	66	506	353	295	37×32	75.14	73.48	97.79	54.96	91.43	85.00	87.50	45.28	128.92
98	51	65	539	370	311	42×38	80.42	68.78	85.53	54.20	90.82	80.00	82.22	52.00	127.45
99	54	64	513	357	302	37×30	79.44	71.11	89.51	49.24	97.98	77.27	73.87	50.00	118.52
01	59	67	530	375	310	37×35	78.31	69.84	89.19	54.81	96.04	81.71	84.62	49.06	113.56
98	57	67	519	362	301	40×31	78.57	68.13	86.71	53.85	97.96	77.90	79.76	50.00	117.54
02	53	67	536	371	311	41×33	79.03	73.12	92.52	(50.35)	95.10	87.80	88.61	47.17	126.42
97	49	65	?	?	?	?	?	68.11	?	52.17	97.94	82.93	85.18	43.64	132.65
00	54	63	523	374	296	35×31	76.34	70.43	92.25	55.30	96.00	88.61	86.08	44.44	116.67
04	53	65	523	372	297	36×32	76.06	70.74	93.01	54.20	92.31	76.19	83.75	45.28	122.64
01	54	62	513	355	299	39×34	79.56	67.40	84.72	55.12	89.11	76.19	80.49	50.98	114.81
06	(55)	(65)	524	359	302	?	77.96	69.35	88.97	(53.28)	94.34	80.00	77.50	44.64	(118.18)
00	54	67	(528)	374	(300)	40×35	(73.16)	67.89	(92.81)	?	91.00	81.40	?	47.27	124.07

[8] "Cráneos de Guanches encontrados en la cueva de Moncion en Candelaria. omision de los Sres D. Agustin Otazo corresponsal de Candelaria y D. Juan ethencourt y D. Antonio Domingue. Mandibulas letra D. desde No. 56 al) incl. fueron halladas en la misma cueva."

[9] "Cráneos de Guanches encontrados en Imonce en Candelaria. Encontrados por la comision de los Sres. corresponsales del Rosario y Candelaria."

[10] Premature ossification of sagittal suture.

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
169	Imonce	middle	181	137	127	148.3	97	(65)	(132)	32	33	39	39	52	23	90
171	en Can-	middle	177	132	126	145	87	69	129	31	30	39	39	54	25	93
172	delaria	young	196	148	134	159.3	98	75	134	34	33.5	43	43	52	24	96
173	"	old	188	147	138	157.6	97	(70)	?	36.5	?	42.5	?	52	24	(93)
175	"	young	195	153	132	160	105	77	134	34.5	34.5	39.5	39.5	57	27	92
176	"	middle	195	149	135	159.6	106	76	140	33	31.5	39.5	40	55	25	90
177	"	middle	184	144	?	?	97	72	?	32	?	40	39.5	49	25	?
178	"	young	180	144	120	148	97	67	129	32	33	40	38	53	27	91
179	"	young	184	143	140	155.6	93	67	126	30.5	31	41	40	51	23	89
181	"	young	191	142	139	157.3	95	78	128	34	34.5	39.5	38	56	21	90
183	"	young	184	138	135	152.3	96	65	133	30	30	38	38	47	24	97
185	"	young	179	135	131	148.3	89	63	121	31.5	31	41.5	39	47	26	98
186	"	young	183	136	130	149.6	94	70	(125)	35	34.5	41	41	50	24	91
188	"	young	187	143	132	154	92	71	123	31.5	32	39	38	49.5	24	95
189	"	young	179	140	136	151.6	90	68	133	30	?	39	40	50	22	100
190	"	young	183	145	129	152.3	95	68	138	34	34	43.5	42	47	27	93
191	"	young	190	136	133	153	92	73	128	35.5	34	38	39	51.5	20	94
192	"	middle	189	149	143	160.3	100	70	132	34	32.5	40	40	51	23	96
193	"	young	178	138	125	147	94	73	128	35	35	39.5	39.5	53	22	91
194	"	young	194	145	135	158	101	70	135	32	33	41	42	53	27	102
195	"	middle	182	142	127	150.3	92	70	133	32	33	38.5	38.5	52	(21)	94
196	"	young	193	142	134	156.3	98	80	(141)	34	34	42	42.5	60	24	97
197	"	middle	195	146	137	159.3	100	77	133	33.5	33.5	44	44	52	24	95
198	"	young	191	142	130	154.3	88	(73)	135	35	35	40	40.5	52[11]	65	?
201	"	old	185	147	128	153.3	98	(72)	(143)	32	33	41	40	55	25	97
202	"	young	198	155	131	161.3	103	83	146	39	40	43	43.5	58	28	92
206	"	young	193	144	138	158.3	93	(68)	139	34	34	42	42	50	24	96
207	"	young	185	138	128	150.3	102	72	130	35	34	40	39	54	23	91
208	"	young	185	140	130	151.6	100	70	133	33	34	40	40	51	25	96
210	"	old	186	137	137	153.3	90	70	132	34.5	33.5	39	40	50	25	98
211	"	young	186	143	135	154.6	86	70	126	32	34	42	39	49	22	(91)
212	"	middle	188	139	128	151.6	102	68	136	32	34	42	42	51	24	94
213	"	young	184	145	129	152.6	95	74	129	33	33	40	40	52	21	89
214	"	middle	187	142	135	154.6	96	74	?	35.5	33	?	(40)	56	25	91
216	"	old	189	141	133	154.3	98	73	137	33.5	33.5	40.5	40.5	50	26	98
217	"	middle	182	142	131	151.6	95	74	(130)	32	32.5	(40)	(40)	49	(28)	96
218	"	young	191	150	149	163.3	101	80	134	35	36	42	42	56	(27)	89
220	"	young	182	146	128	152	95	67	129	32.5	32	39	38	48	23	86
221	"	middle	187	139	137	154.3	99	69	132	35	35	39	39	49	26	87
222	"	middle	185	144	138	155.6	99	75	133	34	33	42	42	54	26	98
223	"	middle	195	149	140	161.3	100	74	140	32.5	32.5	43	41.5	56	23	98
224	"	young	193	146	136	158.6	99	70	134	34	33.5	39	39	53	25	102
225	"	middle	185	137	129	150.3	91	70	130	31.5	31	34	34.5	48	22	92
226	"	young	187	147	127	153.6	99	68	134	33	34	42.5	40	51	22	87
228	"	young	194	147	133	156	103	71	139	34	33	43	43	53	26	90
229	"	middle	180	137	130	149	97	73	134	33.5	32.5	41	41	50	23	94
230	"	middle	195	141	134	156.6	91	72	132	31	31	38.5	38.5	54	24	103
231	"	middle	186	142	137	155	98	73	131	35	35	40	40	52	23	89
233	"	middle	193	142	138	157.6	98	71	132	32.5	34	41	41	50	23	97
236	"	middle	187	147	?	?	106	67	144	?	30.5	46	46	47.5	24	109
238	Adeje	middle	186	144	128	152.6	94	71	137	33	33.5	39	39	52	22	96
241	"	middle	184	145	133	154	93	63	130	32	32	39	38	48	23	95
242	"	middle	188	150	133	157	97	75	141	33.5	34	42	41.5	52	23	104
243	"	old	187	146	127	153.3	94	(74)	137	36	36	41	41	55	25	94
244	"	young	189	139	129	152.3	99	74	136	33	33	41	41	54	23	97
246	"	old	178	142	130	150	98	77	137	34	34	40	39	56	27	93

[11] Right, 52; left, 65.

Basion-Nasion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion-Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right Left	Nasal Index	External Palatal Index
98	?	?	509	348	292	42×36	75.69	70.17	92.70	(49.24)	91.84	82.05–84.62	44.23	?
98	53	63	463	345	289	35×30	74.58	71.19	95.45	53.49	94.90	79.49–76.92	46.30	118.87
103	55	65	543	388	319	39×35	75.51	68.37	90.54	55.97	93.20	79.07–77.90	46.15	118.18
104	?	?	(535)	378	318	38×31	78.19	73.40	93.88	?	(89.42)	85.89– ?	46.15	?
101	(57)	63	553	?	316	?	78.46	67.69	86.27	57.46	91.09	87.35–87.35	47.37	(110.53)
101	52	69	553	(400)	307	31×32	76.41	69.23	90.60	54.28	89.11	83.54–78.75	45.45	132.69
?	53	66	520	?	301	?	78.26	?	?	?	?	80.00– ?	51.02	124.53
95	53	64	516	356	296	39×33	80.00	66.67	83.33	51.94	95.79	80.00–86.84	50.94	120.75
100	51	64	519	378	313	39×36	77.72	76.09	97.90	53.17	89.00	74.39–77.50	45.10	125.49
102	49	65	532	381	306	41×34	74.35	72.77	97.89	60.94	88.24	86.08–90.79	37.50	132.65
102	52	64	507	365	296	32×31	75.00	73.37	97.83	48.87	95.10	78.95–78.95	51.06	123.08
100	50	58	503	361	296	31×27	75.42	73.18	97.04	52.07	98.00	75.90–79.49	55.32	116.00
95	55	65	508	366	292	36×31	74.32	71.04	95.59	(56.00)	95.79	85.37–84.15	48.00	118.18
99	56	65	521	369	307	38×32	76.47	70.59	92.31	57.72	95.96	80.78–84.21	48.48	116.07
96	58	66	505	?	300	?	78.21	75.98	97.14	51.13	104.17	76.92– ?	44.00	113.79
100	56	70	519	357	301	40×34	79.23	70.49	88.97	49.27	93.00	78.16–80.95	57.45	125.00
99	53	63	521	382	302	?	71.58	70.00	97.79	57.03	94.95	93.43–87.18	38.83	118.87
100	56	(64)	533	382	318	40×33	78.84	75.66	95.97	53.03	96.00	85.00–81.25	45.10	(114.29)
96	47	60	508	351	296	39×33	77.53	70.22	90.58	57.03	94.79	88.61–88.61	41.51	127.66
110	55	62	547	378	316	35×33	74.74	69.59	93.10	51.85	92.93	78.05–78.57	50.94	112.73
99	56	66	516	361	294	36×32	78.02	69.78	89.44	52.63	94.95	83.12–85.71	(40.38)	117.86
103	55	71	536	389	305	37×29	73.58	69.43	94.37	(56.73)	94.17	80.95–80.00	40.00	129.09
109	57	62	542	386	312	34×30	74.87	70.26	93.84	57.89	97.16	76.14–76.14	46.15	108.77
97	?	?	529	384	304	40×32	74.35	68.06	91.55	(54.07)	?	87.50–86.42	?	?
104	(56)	(60)	527	355	305	37×32	79.46	69.19	87.07	(50.34)	93.27	78.05–82.50	45.45	(107.14)
104	55	67	559	388	322	39×30	78.28	66.16	84.52	56.85	88.46	90.70–91.95	48.28	121.82
103	(55)	68	540	(382)	(312)	(42×31)	74.61	71.50	95.83	(48.92)	93.20	80.95–80.95	48.00	(123.64)
96	57	64	519	362	302	42×36	74.59	69.19	92.75	55.38	94.79	87.50–87.18	42.59	112.28
97	54	64	520	374	303	40×29	75.68	70.27	92.86	52.63	98.97	82.50–85.00	49.02	118.52
101	54	68	517	379	303	39×33	73.66	73.66	100.00	53.03	97.03	88.46–83.75	50.00	125.93
95	55	65	511	365	304	40×33	76.88	72.58	94.41	55.56	(95.79)	76.19–87.18	44.90	118.18
99	53	65	524	365	301	40×33	73.94	68.09	92.09	50.00	94.95	76.19–80.95	47.06	122.64
97	52	65	524	370	310	36×29	78.80	70.11	88.97	57.36	91.75	82.50–82.50	40.38	125.00
101	55	67	(528)	372	302	41×35	75.94	72.19	95.07	?	90.10	?–(82.50)	44.64	121.82
102	56	73	525	380	308	35×31	74.60	70.37	94.33	53.28	96.08	82.71–82.71	52.00	130.36
98	60	(71)	517	367	306	40×38	78.02	71.98	92.25	(56.92)	97.96	(80.00–81.25)	(57.14)	(118.33)
103	56	73	543	?	320	?	78.53	78.01	99.33	59.70	86.41	83.33–85.71	(48.21)	130.36
94	49	61	512	365	308	38×33	80.22	70.33	87.67	51.94	91.49	83.33–84.21	47.92	124.49
96	52	65	(516)	370	302	40×31	74.33	73.26	98.56	52.27	90.63	89.74–89.74	53.06	125.00
99	57	64	517	377	316	38×31	77.84	74.59	95.83	56.39	98.99	80.95–78.57	48.15	112.28
99	56	70	548	399	322	40×34	76.41	71.79	93.96	52.85	98.99	75.58–78.31	41.07	125.00
107	56	68	534	372	303	40×35	75.65	70.47	93.15	52.24	95.33	87.18–85.90	47.17	121.43
99	54	64	508	363	288	40×35	74.05	69.73	94.16	53.85	92.93	92.65–89.86	45.83	118.52
97	50	63	532	370	313	39×32	78.61	67.91	86.39	50.75	89.67	77.65–85.00	43.14	126.00
100	56	73	547	386	312	40×32	75.77	68.56	90.48	51.07	90.00	79.07–76.74	49.06	130.36
98	52	61	507	360	297	38×34	76.11	72.22	94.89	54.48	95.92	81.71–79.27	46.00	117.31
102	55	65	?	382	307	38×32	72.31	68.72	95.04	54.55	100.98	80.52–80.52	44.44	118.18
101	51	62	521	373	311	40×33	76.34	73.66	96.48	55.73	88.12	87.50–87.50	44.23	121.57
105	54	64	536	380	306	39×33	73.58	71.50	97.18	53.79	92.38	79.27–82.93	46.00	118.52
105	60	71	523	?	?	35×32	78.61	?	?	46.52	103.81	? –66.31	50.53	118.33
98	(55)	66	520	370	300	38×29	77.42	68.82	88.89	51.82	97.96	84.62–85.90	42.31	(120.00)
99	55	61	516	360	293	40×31	78.80	72.28	91.72	48.46	95.96	82.05–84.21	47.92	110.91
106	59	66	534	370	312	37×35	79.79	70.74	88.67	53.19	98.11	79.76–81.93	44.23	111.86
102	58	67	521	360	292	42×35	78.07	67.91	86.99	(54.01)	92.16	87.80–87.80	45.45	115.52
102	51	66	528	363	300	43×34	73.54	68.25	92.81	54.41	95.10	80.49–80.49	42.59	129.41
(94)	60	72	513	362	312	43×31	79.78	73.03	91.55	56.20	(98.94)	85.00–87.18	48.21	120.00

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
249	Adeje	middle	?	146	129	?	104	68	(136)	33	34	41	40	52	24	97
251	Tamaimo[12]	middle	189	143	132	154.6	102	73	144	33	34	45	40	54	23	94
253	"	old	179	143	130	150.6	100	(65)	128	31.5	31	42	42	45	24	91
254	"	middle	186	141	129	152	93	68	128	32	32.5	39.5	39	46	22	89
255	"	old	188	140	133	153.6	97	(72)	128	34	35	43	41	53	22	96
260	"	middle	181	143	132	152	88	58	129	29.5	30.5	39	37	43	19	92
261	" [13]	old	184	140	125	149.6	93	70	127	34.5	34.5	40	38.5	50	24	91
333	Puerto	old	179	137	134	150	90	?	126	29.5	30	37	37	45	24	93
334	Orotava[14]	old	188	145	134	155.6	97	68	128	33.5	32.5	38	39	53	24	98
335	"	old	188	142	127	152.3	97	?	130	32	33	38	38	50	24	?
339	"	old	180	138	129	149	91	(65)	(122)	(33)	32.5	40	41	47	29	91
340	"	old	183	137	131	150.3	88	68	135	32	31	39.5	39.5	51	26	98
341	"	old	186	142	130	152.6	98	(65)	137	29	28	40	39	50	24	(95)
343	"	middle	180	138	134	150.6	94	67	127	32	32	40	39	51	24	92
344	"	old	190	147	135	157.3	93	(70)	145	32.5	32.5	40	40	50	23	(97)
345	"	old	192	139	132	154.3	97	(71)	139	32	32.5	41.5	40	51	24	93
348	"	middle	185	145	136	155.3	97	67	?	31	31	?	39	50	24	95
352	"	old	179	135	125	146.3	97	?	128	31	31	39	39	44	23	?
354	"	old	181	133	128	147.3	93	(67)	(128)	31	30	39.5	42	47	25	(100)
356	"	old	190	(147)	130	155.6	100	(70)	?	34	34	41	43	53	30	(94)
358	"	old	180	140	130	150	96	64	138	31	31	39.5	39.5	48	25	92
359	"	middle	183	148	135	155.3	98	(66)	133	33	33	37	37	48	22	92
360	"	old	186	142	124	150.6	103	62	135	30	30	39.5	39.5	46	26	(90)
362	"	old	192	145	133	156.6	103	?	130	34	34	41	41	49	27	93
364	"	old	189	137	138	154.6	95	(73)	(135)	35	35	43.5	42	55	25	(96)
369	"	young	179	137	128	148	94	59	128	30	30	41	41	42	23	90
370	"	old	178	139	128	148.3	93	(68)	?	35.5	35.5	41.5	41.5	51	21	88
375	"	old	188	139	138	155	92	?	?	30	30	40	?	55	24	?
376	"	young	179	135	130	148	98	66	134	33	33	39	39	51	24	94
378	"	old	178	136	132	148.6	92	55	119	27	28	36	36	40	21	87
379	"	young	181	140	131	150.6	95	63	120	31	31	38	38	47	23	90
381	"	old	181	148	135	154.6	102	(68)	132	32.5	32	38	38	49	24	88
382	"	old	185	139	132	152	99	67	137	33.5	35	43	43	53	21	91
383	"	middle	182	136	128	148.6	86	66	125	29	28	40	40	48	25	98
385	"	middle	181	141	137	153	105	70	133	30	30	43	43	51	24	95
386	"	old	180	141	136	152.3	91	(70)	127	31	30	39	39	49	20	96
387	"	middle	178	135	126	146.3	97	66	130	32	32	38.5	38.5	50	23	89
390	"	old	182	139	129	150	99	?	133	31	31	40	41	46	24	94
392	"	old	188	139	132	153	92	68	131	34	34	40	39	52	24	97
396	"	old	184	148	126	152.2	100	65	?	33	33	?	38	49	25	90
397	"	young	?	142	?	?	98	66	127	30	29	38	37	49	24	?
398	"	young	182	137	125	148.1	91	69	?	32	32	37	37	49	27	91
400	"	middle	182	136	127	148.3	85	60	126	30.5	30.5	38	38	43	22	88
401	"	old	178	130	125	144.3	85	62	123	34	34	38	37	46	23	86
402	"	middle	178	130	130	146	86	61	?	28	28	41.5	40	44	23	90
403	"	middle	188	140	127	151.6	99	?	132	31.5	31.5	39	39	51	25	?
405	"	old	176	137	120	144.3	86	64	122	30	30	35	35	46	25	?
406	"	middle	176	136	125	145.6	91	61	122	31	30	38	39	47	25	(88)
407	"	middle	186	139	133	152.6	98	61	125	27.5	27.5	37.5	40	44	27	96
408	"	young	173	141	127	147	94	64	124	31	31	38	38	43	24	95
409	"	young	186	145	132	154.3	99	74	137	33	34	40.5	39	52	24	(88)
412	"	old	188	145	132	155	105	?	135	34	34	38	38	54	25	?
414	"	old	191	151	125	155.6	101	?	135	32	32	40	40	51	24	?
418	"	middle	193	137	?	?	97	65	131	32	31	42	42	52	27	?
419	"	old	181	138	130	149.6	92	?	134	31.5	31.5	42	39.5	54	27	?
420	"	young	186	144	127	152.3	103	71	137	32	33	45	45	55	29	90

[12] Skulls 251–260 incl. "Encontrados en la cueva del Lajial en Tamaimo."

[13] Skull 261. "Encontrado en el Auden del Vamo (Tamaimo)."

[14] Skulls 333–450. "Encontrados en Puerto de la Cruz de la Orotava. Donativo de D. Ramon Gomez, corresponsal del Puerto de la Cruz."

Basion-Nasion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion-Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right Left	Nasal Index	External Palatal Index
103	56	66	533	375	305	35×30	?	?	88.36	(50.00)	94.17	80.49–85.00	46.15	117.86
101	58	68	537	371	308	38×37	75.66	69.84	92.31	50.69	93.07	73.33–85.00	42.59	117.24
95	?	?	517	360	302	38×33	79.89	72.63	90.91	(50.78)	95.79	75.00–73.81	53.33	?
93	50	60	514	374	299	38×32	75.81	69.35	91.49	53.13	95.70	81.01–83.33	47.83	120.00
105	57	65	521	363	301	39×31	74.47	70.74	95.00	(56.25)	91.43	79.07–85.37	41.51	114.04
98	52	56	508	365	?	32×30	79.01	72.93	92.31	44.96	93.88	75.64–82.43	44.19	107.69
93	?	?	512	369	291	36×28	76.09	67.93	89.29	55.12	98.91	86.25–89.61	48.00	?
96	?	?	503	361	297	40×29	76.54	74.86	97.81	?	96.88	79.73–81.08	53.33	?
103	?	?	524	367	307	39×33	77.13	71.28	92.41	53.13	95.15	88.16–83.33	45.28	?
96	?	?	530	375	302	40×32	75.53	67.55	89.44	?	?	84.21–86.84	48.00	?
96	51	57	509	358	305	38×31	76.67	71.67	93.48	(53.28)	94.79	(82.50-79.27)	61.70	111.76
99	55	63	508	353	291	40×35	74.86	71.58	95.62	50.37	98.99	81.01–78.48	50.98	114.55
99	?	?	515	362	294	37×32	76.34	69.52	91.55	(47.44)	95.96	72.50–71.79	48.00	?
104	49	62	504	357	299	35×31	76.67	74.44	97.10	52.76	88.46	80.00–82.05	47.06	126.53
101	?	?	532	365	311	41×36	77.37	71.05	91.84	(48.27)	(96.04)	81.25–81.25	46.00	?
103	(53)	(62)	526	371	301	38×33	72.40	68.75	94.96	(51.07)	90.29	77.11–81.25	47.06	(116.98)
102	(52)	(62)	523	374	?	38×31	78.38	73.51	93.79	?	93.14	? –79.49	48.00	(119.23)
100	?	?	497	351	289	35×26	75.42	69.83	92.59	?	?	79.49–79.49	52.27	?
101	55	64	502	361	290	39×31	73.48	70.72	96.24	(52.34)	(99.01)	78.48–71.43	53.19	116.36
98	?	?	(535)	379	(310)	40×33	(77.37)	68.42	(88.44)	?	(95.92)	82.93–79.07	56.60	?
94	53	64	510	363	301	37×27	77.78	72.22	92.86	46.37	97.87	78.48–78.48	52.08	120.75
101	(52)	(62)	515	357	300	38×34	80.87	73.77	91.22	(49.62)	91.09	89.19–89.19	45.83	(119.23)
94	?	?	529	362	302	37×30	76.34	66.67	87.32	45.93	(95.74)	75.95–75.95	56.52	?
103	?	?	536	(370)	313	?	75.52	69.27	91.72	?	90.29	82.93–82.93	55.10	?
107	(55)	(69)	527	?	301	?	72.49	73.02	100.73	(54.07)	(89.72)	80.46–83.33	45.45	(125.45)
94	47	62	505	370	302	33×26	76.54	71.51	93.43	46.09	95.74	73.17–73.17	54.76	131.91
93	?	?	507	356	295	38×34	78.09	71.91	92.09	?	94.62	85.54–85.54	41.18	?
107	?	?	521	375	301	36×33	73.94	73.40	99.28	?	?	75.00– ?	43.64	?
103	52	61	503	347	289	37×35	75.42	72.63	96.30	49.25	91.26	84.62–84.62	47.06	117.31
94	?	?	496	363	301	36×32	76.40	74.16	97.06	46.22	92.55	75.00–77.78	52.50	?
96	49	58	514	370	(312)	35×27	77.35	72.38	93.57	52.50	93.75	81.58–81.58	48.94	118.37
99	50	58	525	364	315	34×30	81.77	74.59	91.22	(51.52)	88.89	85.53–84.21	48.98	116.00
101	51	61	522	365	302	37×32	75.14	71.35	94.96	48.90	90.10	77.90–81.40	39.62	119.61
102	52	61	501	350	295	38×30	74.73	70.33	94.12	52.80	96.08	72.50–70.00	52.08	117.31
104	51	62	517	367	310	36×31	77.90	74.59	97.16	52.63	91.35	69.77–69.77	47.06	121.57
95	?	?	508	355	295	38×29	78.33	75.56	96.45	(55.12)	101.05	79.49–76.92	40.82	?
95	50	63	501	354	288	36×27	75.84	70.79	93.33	50.77	93.68	83.12–83.12	46.00	126.00
100	?	?	517	363	295	39×32	76.37	70.88	92.81	?	94.00	77.50–75.61	52.17	?
102	?	?	526	373	302	37×30	73.94	70.21	94.96	51.91	95.10	85.00–87.18	46.15	?
95	50	64	525	368	308	41×35	80.43	68.48	85.14	?	94.74	? –86.84	51.02	128.00
?	53	62	?	?	312	?	?	?	?	51.97	?	78.95–78.38	48.98	116.98
98	51	62	517	352	292	37×32	75.27	68.68	91.24	?	92.86	86.49–86.49	55.10	121.57
94	?	?	505	360	284	37×33	74.73	69.78	93.38	47.62	93.62	80.27–80.27	51.16	?
93	?	?	486	352	287	39×34	73.03	70.22	96.15	50.41	92.47	89.47–91.89	50.00	?
96	47	60	496	357	288	38×30	73.03	73.03	100.00	?	93.75	67.47–70.00	52.27	127.66
99	?	?	527	374	302	37×30	74.47	67.55	90.71	?	?	80.77–80.77	49.02	?
96	?	?	497	346	289	32×29	77.84	68.18	87.59	52.46	?	85.71–85.71	54.35	?
96	50	60	499	345	289	37×28	77.27	71.02	91.91	50.00	(91.67)	81.58–76.92	53.19	120.00
98	?	?	517	365	304	40×33	74.73	71.51	95.68	48.80	97.96	73.33–68.75	61.36	?
97	55	64	497	350	295	35×32	81.50	73.41	90.07	51.61	97.94	81.58–81.58	55.81	116.36
100	51	62	524	370	310	35×31	77.96	70.97	91.03	54.01	(88.00)	81.48–87.18	46.15	121.57
104	?	?	529	380	313	32×28	77.13	70.21	91.03	?	?	89.47–89.47	46.30	?
98	?	?	542	375	307	40×33	79.06	65.45	82.78	?	?	80.00–80.00	47.06	?
?	?	?	527	380	?	?	70.98	?	?	49.62	?	76.19–73.81	51.92	?
100	?	?	505	365	301	35×30	76.24	71.82	94.20	?	?	75.00–79.75	50.00	?
102	54	67	537	370	303	39×34	77.42	68.28	88.19	51.82	88.24	71.11–73.33	52.73	124.07

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
421	Orotava[14]	young	178	137	126	147	99	64	?	30	28.5	39	39	45	22	92
422	"	young	190	136	134	153.3	91	70	135	30.5	30.5	40	40	55	24	99
423	"	old	186	138	133	152.3	91	64	129	31	31	40	40	44	23	90
424	"	middle	178	136	131	148.3	96	57	132	29	29	38	38	42	22	89
427	"	middle	177	136	124	145.6	92	61	126	29	27.5	38	38	43	24	98
428	"	middle	185	135	140	153.3	97	67	?	33	31.5	40	40	52	24	100
429	"	old	196	142	136	158	99	?	129	35	35	40	40	52	24	96
430	"	middle	187	131	136	151.3	96	66	137	30	30.5	38	37	46	25	91
431	"	middle	191	139	140	156.6	94	72	132	29	29.5	40	40	52	24	95
433	"	young	178	144	132	151.3	88	60	130	28	28	40	38	46	24	94
435	"	old	187	145	135	155.6	93	70	131	33	33	41	41	51	24	89
436	"	middle	188	144	136	156	100	65	(134)	29	30	42	42	47	25	92
440	"	middle	175	137	120	144	90	66	130	31	30	37.5	38	46	24	93
441	"	old	188	145	136	156.3	89	(67)	132	30	30	39	38	53	33	(98)
442	"	young	180	142	135	152.3	88	67	129	28.5	31	39	37	50	23	100
444	"	old	185	140	133	152.6	96	62	122	29	29	37	37	42	24	92
446	"	young	180	140	127	149	99	65	124	32	32	39	40	47	20	88
447	"	old	180	140	136	152	95	65	129	31	32	38	37	49	24	(93)
448	"	old	188	133	134	151.6	100	70	134	30	?	41	41	52	21	100
450	"	old	193	139	134	155.3	93	?	?	30	?	42	?	?	?	?
482	Bajamar	old	?	141	139	?	101	74	135	31	29	42	42	52	27	104
758	Bco. de	?	174	135	119	142.6	97	69	126	33	34	39	39	50	24	93
759	Horchilla	young	178	134	134	148.6	93	59	126	31	31	39	38	45	22	91
760	S.Miguel[15]	young	182	134	129	148.3	95	65	125	36	36	43	43	44	23	96
761	"	middle	178	134	(122)	144.6	97	67	124	34	33	38.5	38.5	50	23	90
762	"	old	187	139	125	150.3	103	(70)	133	34.5	34.5	40	40	50	25	(96)
764	"	young	182	139	129	150	101	76	130	35	35	42	40	55	21	90
765	"	middle	186	142	130	152.6	100	72	133	32.5	32	41	39	53	24	93
766	"	middle	181	135	130	148.6	86	68	126	33	33	41	40	50	23	93
767	"	old	188	144	134	155.3	101	76	(136)	33	35	42	42	53	25	91
775	"	old	185	141	126	150.6	99	74	132	37	37	42	42	54	22	87
772	"	old	188	144	126	152.6	101	70	137	33	33	40	39	50	24	96
803	Candelaria	middle	186	139	130	151.6	92	68	120	30	30	39	39	49	22	94
800	S. Miguel	old	185	?	131	?	90	64	126	31	31	36	38	46	22	88
769	"	middle	189	142	137	156	96	65	130	30	30	37	37	48	22	90
770	"	middle	195	142	133	156.6	103	72	?	32	32	40	40	52	26	97

[15] Skulls 758-775 incl. and skull 800. "Encontrados en el barranco de Horchilla, San Miguel (año 1881). Comision de D. Juan Bethencourt y D. Agustin Otazo, corresponsal de Candelaria."

Basion-Nasion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion-Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right	Orbital Index Left	Nasal Index	Exter Pala Ind
96	50	62	502	353	300	34×32	76.97	70.79	91.97	?	95.83	76.92	73.07	48.89	124.
102	55	66	525	370	300	43×36	71.58	70.53	98.53	51.85	97.06	71.25	76.25	43.64	120.
99	?	?	508	367	300	36×31	74.19	71.51	96.38	49.61	90.91	77.50	77.50	52.27	?
98	48	60	501	350	293	37×32	76.40	73.60	96.32	43.18	90.82	76.32	76.32	52.38	125.
97	52	(58)	498	355	292	31×28	76.84	70.06	91.18	48.41	101.03	76.32	72.37	55.81	(111.
109	54	63	512	360	?	38×33	72.97	75.68	103.70	?	91.74	82.50	78.75	46.15	116.
108	?	?	541	378	304	37×31	72.45	69.39	95.77	?	88.89	87.50	87.50	46.15	?
100	49	58	506	370	298	37×31	70.05	72.73	103.82	48.17	91.00	78.95	82.43	54.35	118.
102	56	65	524	385	304	35×29	72.77	73.30	100.72	54.55	93.14	72.50	73.75	46.15	116.
95	49	65	494	364	305	33×29	80.90	74.16	91.67	46.15	98.95	70.00	73.68	52.17	132.
98	53	62	521	377	310	36×32	77.54	72.19	93.10	53.44	90.82	80.49	80.49	47.06	116.
96	49	65	530	378	313	40×30	76.60	72.34	94.44	(48.51)	95.83	69.05	69.77	53.19	132.
96	50	61	497	344	293	36×29	78.29	68.57	87.59	50.77	96.88	82.67	78.95	52.17	122.
99	?	?	525	380	313	38×36	77.13	72.34	93.79	(50.76)	(98.99)	76.92	78.95	62.26	?
106	51	60	504	351	308	39×33	78.89	75.00	95.07	51.94	94.34	73.07	83.78	46.00	117.
94	?	?	509	378	303	34×28	75.68	71.89	95.00	50.82	97.87	78.38	78.38	57.14	?
93	49	65	512	363	296	35×30	77.78	70.56	90.71	52.42	94.62	82.05	80.00	42.55	132.
99	?	?	513	369	300	38×34	77.78	75.56	97.14	50.39	(93.94)	81.58	86.49	48.98	?
105	53	63	532	368	310	41×39	70.74	71.28	100.75	52.24	95.24	73.17	?	40.38	118.
?	?	?	534	371	300	42×33	72.02	69.43	96.40	?	?	71.43	?	?	?
106	58	67	?	?	309	?	?	?	98.58	54.81	98.11	73.81	69.50	51.92	115.
97	50	60	497	340	287	40×30	77.59	68.39	88.15	54.76	95.88	84.62	87.18	48.00	120.
98	47	57	499	361	302	35×30	75.28	75.28	100.00	46.83	92.86	79.49	81.58	48.89	121.
(98)	55	61	504	365	301	40×32	73.63	70.88	96.27	52.00	(97.96)	83.72	83.72	52.27	110.
96	52	61	500	350	293	37×29	75.28	68.54	(91.04)	54.03	93.75	88.31	85.71	46.00	117.
(104)	?	?	524	368	295	36×32	74.33	66.84	89.93	(52.63)	(92.31)	86.25	86.25	50.00	?
98	53	66	513	?	302	?	76.37	70.88	92.81	58.46	91.84	83.33	87.50	38.18	124.
99	54	64	525	371	302	37×28	76.34	69.89	91.55	54.14	93.94	79.27	82.05	45.28	118.
100	50	65	505	369	292	34×29	74.59	71.82	96.30	53.97	93.00	80.49	82.50	46.00	130.
101	51	61	529	364	312	43×35	76.60	71.28	93.06	(55.88)	90.10	78.57	83.33	47.17	119.
95	53	61	523	375	303	36×33	76.22	68.11	89.36	56.06	91.58	88.10	88.10	40.74	115.
101	55	64	527	365	310	39×32	76.60	67.02	87.50	51.09	95.05	82.50	84.62	48.00	116.
100	52	62	513	368	(289)	34×30	74.73	69.89	93.53	56.67	94.00	76.92	76.92	44.90	119.
95	52	60	516	378	296	38×31	?	70.81	?	50.79	92.63	86.11	81.58	47.83	115.
98	(50)	(60)	523	385	309	39×32	75.13	72.49	96.48	50.00	91.84	81.08	81.08	45.83	(120.
103	53	65	528	?	307	42×33	72.82	68.21	93.66	?	94.17	80.00	80.00	50.00	122.

TABLE II. — MEASUREMENTS OF TENERIFE CRANIA. FEMALE

(Collection of the Municipal Museum of Santa Cruz de Tenerife)

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
8	Chorillo	old	174	139	121	144.6	86	(60)	119	30	31	36	36	49	23	78
9	"	young	180	136	(117)	144.3	91	63	124	32.5	32	36.5	38	46	24	97
14	"	young	171	142	126	146.3	87	62	?	30	?	36	?	45	21	90
15	"	old	184	142	127	151	101	64	128	34	33	38	38.5	50	26	85
23	"	young	181	135	125	147	93	68	?	28	30	40	40	53	23	95
24	"	old	175	138	126	146.3	94	?	?	33	33	38.5	38.5	48.5	24	(90)
25	"	old	182	141	130	151	97	?	?	32	32.5	37.5	37.5	48	26	(90)
28	"	old	177	140	130	149	97	67	125	33	31	40	40	50	25	91
37	"	old	170	135	121	142	88	(63)	?	36	?	39.5	?	46.5	25	88
43	"	middle	180	138	133	150.3	97	72	127	34	34	37.5	37	51	26	91
46	"	middle	181	140	126	149	97	63	126	32	32	39	38.5	46	23.5	93
48	"	middle	180	141	(115)	145.3	88	67	127	33	33	38	39	48	24	(87)
50	"	old	175	137	?	?	86	(63)	?	34	33	38	?	48	20	?
52	"	middle	179	137	123	146.3	97	67	?	30	32	40	40	46.5	24	94
55	"	young	178	142	125	148.3	97	59	122	34	33	39	40	46	23	87
59	"	young	179	137	126	147.3	94	67	?	32	33	37	35	50	25	90
65	"	young	176	138	124	146	91	59	(122)	32.5	32.5	37	37	45	25	88
73	Tacoronte	middle	173	137	122	144	87	58	116	30	30	35	35	43	23	?
77	Candelaria	young	178	134	121	144.3	93	66	118	31	32.5	37	37	47	24	92
79	"	old	180	146	123	149.6	93	62	129	33	34	37	37	47	24	88
81	"	middle	181	137	128	148.6	93	63	126	30	30	39	37.5	45	23	(89)
82	"	old	175	139	(118)[1]	144	95	68	119	32	32	40	41	50	25	90
84	"	old	179	142	122	147.6	100	(71)	127	32	31	40	40	50	24	87
89	"	middle	168	135	119	140.6	92	(69)	125	37	37	37	37	48	23	92
93	Adeje	middle	174	133	127	144.6	86	69	125	32.5	32.5	39	39	48	23	91
97	"	old	180	139	131	150	97	65	126	32	32	38	38	48	24	86
104	Candelaria	middle	176	134	121	143.6	90	66	(117)	32	32.5	39	38.5	47	27	86
106	Taganana	middle	177	137	124	146	89	67	124	34	33	37	37	47	22	88
129	Candelaria	middle	184	143	?	?	99	(72)	?	31.5	32	37	36	53	22	?
132	"	middle	181	135	130	148.6	96	71	131	33	32	42	40	51	23	92
154	"	middle	187	143	126	152	97	70	127	34	33	39.5	39.5	47	25	99
164	"	old	181	140	138	153	97	72	123	36.5	36	41	40	51	27	93
170	"	young	181	140	125	148.6	91	65	120	31	32	38	38	47	22	92
199	"	old	169	137	122	142.6	90	56	?	?	32	?	38	43	24	86
203	"	middle	170	137	123	143.3	90	64	121	30	30	38.5	38	45	24	87
205	"	young	176	132	130	146	92	65	122	31	31.5	40	40	48	22	93
209	"	young	171	143	(125)	146.3	88	69	116	32	32	37.5	38	50	22	(81)
215	"	young	170	139	123	144	93	63	124	28	28	39.5	40	47	24	85
235	"	young	175	134	126	145	85	58	121	31	31.5	41	41	44	25	91
239	Adeje	middle	192	131	120	147.6	93	55	121	30.5	32	39	38	40	23	87
245	"	old	181	138	125	148	92	?	125	33.5	35	42	42	46	25	87
250	"	old	178	142	129	149.6	96	65	124	32.5	32	37	37	46	26	88
252	Tamaimo	young	177	138	127	147.3	92	66	(123)	34	34	42.5	42.5	44	24	92
257	"	middle	179	140	128	149	92	68	129	33	34	42.5	41	48	22	89
258	"	young	178	137	126	147	89	68	(120)	32	32	39	39	45	24	87
299	Orotava	young	175	139	132	148.6	96	65	117	28	29	37	35	47	24	95
320	Arona	old	175	138	123	145.3	89	64	122	30.5	31.5	39	39	49	24	87
337	Orotava	middle	173	132	121	142	88	(57)	?	?	29.5	?	34.5	41	?	(87)
338	"	middle	173	135	125	144.3	92	62	125	28	28	39	36	47	23	93
342	"	old	173	135	124	144	95	60	120	31	31	38	38	43	24	88
346	"	old	175	138	124	145.6	93	64	?	29	30	?	38	48	21	82
349	"	old	181	140	128	149.6	94	65	128	35	32	39.5	39.5	48	22	86
350	"	old	164	139	121	141.3	94	65	116	33	32	38	37.5	48	24	91

[1] Platybasic.

APPENDIX B

TABLE II. — MEASUREMENTS OF TENERIFE CRANIA. FEMALE

(Collection of the Municipal Museum of Santa Cruz de Tenerife)

Basion-Nasion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion-Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right Left	Nasal Index	Ext Pal Ind
92	47	(53)	499	349	283	35×30	79.89	69.54	87.05	(50.42)	84.78	83.33–86.11	46.94	(112
97	53	58	500	?	285	?	75.56	65.00	(86.03)	50.81	100.00	89.04–84.21	52.17	109
92	53	61	495	342	282	36×31	82.46	73.68	88.73	?	97.83	83.33– ?	46.67	115
94	50	62	526	372	297	36×28	77.17	69.02	89.44	50.00	90.43	89.47–85.71	52.00	124
103	52	60	507	344	283	36×30	74.59	69.06	92.59	?	92.23	70.00–75.00	43.40	115
95	?	?	500	349	296	38× ?	78.86	72.00	91.30	?	(94.74)	85.71–85.71	49.48	?
97	?	?	513	369	297	34×28	78.02	71.43	92.20	?	(92.78)	85.33–86.66	54.17	?
97	52	63	506	?	303	?	79.10	73.45	92.86	53.60	93.81	82.50–77.50	50.00	121
92	?	?	482	338	284	? ×33	79.41	71.18	89.63	?	95.65	91.14– ?	53.76	?
99	51	62	511	367	312	35×31	76.67	73.89	96.38	56.69	91.92	90.67–91.89	50.98	121
97	52	60	513	366	291	35×30	77.35	69.61	90.00	50.00	95.88	82.05–83.12	51.09	115
97	46	60	509	350	282	?	78.33	(63.89)	(81.56)	52.76	(89.69)	86.84–84.62	50.00	136
?	?	?	497	350	272	?	78.29	?	?	?	?	89.47– ?	41.67	?
95	54	63	506	357	281	33× ?	76.54	68.72	89.78	?	98.95	75.00–80.00	51.61	(116
95	50	59	512	354	295	39×35	79.78	70.22	88.03	48.36	91.58	87.18–82.50	50.00	118
99	47	61	(499)	357	?	36×30	76.54	70.39	91.97	?	90.91	86.49–94.29	50.00	129
91	?	?	499	353	288	36×31	78.41	70.45	89.86	(48.36)	96.70	87.84–87.84	55.56	?
(86)	?	?	462	357	289	36×27	79.19	70.52	89.05	50.00	?	85.71–85.71	53.49	?
93	52	60	503	352	286	35×33	75.28	67.98	90.30	55.93	98.92	83.78–87.84	51.06	115
95	49	62	515	360	292	33×29	81.11	68.33	84.25	48.06	92.63	89.19–91.89	51.06	126
(98)	(52)	60	505	(361)	(303)	35×27	75.69	70.72	93.43	50.00	(90.82)	76.92–80.00	51.11	115
94	51	58	500	339	280	35×34	79.43	67.43	84.89	57.14	95.74	80.00–78.05	50.00	113
95	(53)	61	515	352	(303)	36×29	79.33	68.16	85.92	(55.91)	91.58	80.00–77.50	48.00	115
93	51	55	481	335	281	35×30	80.36	70.83	88.15	(55.20)	98.92	100.00–100.0	47.92	107
98	51	62	490	345	285	35×29	76.44	72.99	95.49	55.20	92.86	83.33–83.33	47.92	121
95	?	?	512	370	296	39×33	77.22	72.78	94.24	51.59	90.53	84.21–84.21	50.00	?
93	53	61	497	350	286	35×30	76.14	68.75	90.30	(56.41)	92.47	82.05–84.42	57.45	115
(94)	52	57	499	351	287	?	77.40	70.06	90.51	54.03	(93.62)	91.89–89.19	46.81	109
?	53	64	526	360	294	?	77.72	?	?	?	?	85.13–88.89	41.51	120
96	51	63	507	360	296	37×30	74.59	71.82	96.30	54.20	95.83	78.57–80.00	45.10	123
99	53	64	518	372	307	35×28	76.47	67.38	88.11	55.12	100.00	86.08–83.54	53.19	120
100	?	?	512	368	305	38×34	77.35	76.24	98.57	58.54	93.00	89.02–90.00	52.94	?
96	50	60	513	363	298	36×30	77.35	69.06	89.29	54.17	95.83	81.58–84.21	46.81	120
90	?	?	486	350	288	35×30	81.07	72.19	89.05	?	95.56	? –84.21	55.81	?
95	48	58	485	346	285	36×32	80.59	72.35	89.78	52.89	91.58	77.92–78.95	53.33	120
96	51	62	496	351	287	38×33	75.00	73.86	98.48	53.28	96.88	77.50–78.75	45.83	121
(90)	49	62	502	360	313	?	83.63	(73.10)	(87.41)	59.48	(90.00)	85.33–84.21	44.00	126
92	49	60	460	341	292	38×33	81.76	72.35	88.49	50.81	92.39	70.89–70.00	51.06	122
93	53	64	490	352	283	38×29	76.57	72.00	94.03	47.93	97.85	75.61–76.83	56.82	120
92	48	55	476	330	275	34×28	68.23	62.50	91.60	45.45	94.57	78.20–84.21	57.50	114
99	?	?	507	359	284	33×31	76.24	69.06	90.58	?	87.88	79.76–83.33	54.35	?
96	48	62	508	362	292	36×29	79.78	72.47	90.85	52.42	91.67	87.84–86.49	56.52	129
100	50	63	501	351	286	37×31	77.97	71.75	92.03	(53.66)	92.00	80.00–80.00	54.55	126
95	51	62	504	359	290	35×33	78.21	71.51	91.43	52.71	93.68	77.65–82.93	45.83	121
92	52	62	503	362	283	37×32	76.97	70.79	91.97	(56.67)	94.57	82.05–82.05	53.33	119
103	51	58	503	358	303	34×30	79.43	75.43	94.96	55.56	92.23	75.68–82.86	51.06	113
94	?	?	501	351	292	36×29	78.86	70.29	89.13	52.46	92.55	78.20–80.77	48.98	?
(90)	?	?	487	351	283	34×29	76.30	69.94	91.67	?	(96.67)	? –85.51	?	?
95	50	59	491	345	285	33×26	78.03	72.25	92.59	49.60	97.89	71.79–77.78	48.94	118
93	48	60	491	351	287	31×26	78.03	71.68	91.85	50.00	94.62	81.58–81.58	55.81	125
94	?	?	502	358	295	34×29	78.86	70.86	89.86	?	87.23	? –78.95	43.75	?
98	?	?	508	357	296	37×30	77.35	70.72	91.43	50.78	87.76	88.61–81.01	45.83	?
95	47	(55)	483	325	295	32×27	84.76	73.78	87.05	56.03	95.76	86.84–85.33	50.00	(117

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
351	Orotava	middle	168	139	121	142.6	83	56	113	27	27	33	32	40	20	80
353	"	middle	182	134	127	147.6	92	66	123	35	35	38	37	51	23	90
355	"	young	173	132	127	144	93	53	125	28	28	38	38	40	22	88
357	"	old	180	143	127	150	91	(61)	127	29	30	36	36	47	23	86
361	"	middle	171	136	124	143.6	89	65	118	33	33	38	?	45	23	(83)
365	"	old	187	142	126	151.6	95	61	123	32	32	39.5	38.5	46	23	90
366	"	old	174	135	122	143.6	89	?	122	31	31	38	37	41	22	(81)
371	"	middle	181	141	133	151.6	95	61	124	31	31	38	39	46	21	94
372	"	old	175	139	124	146	91	(61)	119	29	29.5	36.5	36.5	44	22	85
373	"	young	180	138	125	147.6	88	63	(124)	32	32	40	40	43	20	98
377	"	young	173	132	120	141.6	89	57	(115)	32.5	32.5	37.5	36.5	43	20	92
380	"	young	170	135	123	142.6	81	59	115	28	29.5	36	35	43	21	87
388	"	middle	175	135	125	145	88	62	117	31	32	34.5	35	43	20	86
393	"	old	171	129	123	141	87	57	117	27	27	38	36	43	22	92
410	"	middle	177	142	134	151	98	68	127	33	32	39	39	47	22	88
413	"	old	179	137	125	147	87	63	120	30	30	38.5	38.5	45	24	91
415	"	old	180	138	127	148.3	88	60	125	30	30	38	38	45	23	94
417	"	middle	176	133	122	143.6	89	65	?	32	34	40	39	43	23	93
425	"	young	170	132	120	140.6	90	?	117	32	31	36	36	45	22	(78)
434	"	middle	176	134	125	145	93	65	121	32	32	39	39	48	21	94
437	"	old	175	140	131	148.6	92	68	?	32	?	39.5	?	48	21	89
443	"	middle	180	134	127	147	101	60	121	31	31	38	39	41	22	93
445	"	young	170	138	125	144.3	87	58	123	29	29	36.5	36	44	23	83
481	Bajamar	middle	174	140	123	145.6	90	57	101	30	30	36	33	42	21	86
483	"	old	173	141	124	146	93	62	118	31	31	37	37	44	23	81
763	S. Miguel	old	168	136	(116)	140	88	67	116	32	32	38	38	46	23	(86)
773	"	old	174	138	121	144.3	90	63	118	(29)	30	36	34.5	47	23	83
771	"	middle	177	136	123	145.3	91	67	121	32.5	32	37	38	50	23	99

TABLE III. — MEASUREMENTS OF TENERIFE CRANIA. SEX DOUBTFUL

20	Chorillo	young	189	137	133	153	91	69	127	32	32	40	39.5	49	24	91
34	"	young	171	144	129	148	88	63	120	30	30	36	35.5	45	24	89
51	"	young	180	142	126	149.3	102	65	(126)	33.5	33.5	37	37	49.5	24	87
58	"	young	181	136	124	147	96	71	?	34.5	34	40	?	52	22	(90)
87	Candelaria	middle	180	141	127	149.3	95	65	130	30.5	30.5	38.5	38.5	50	24	95
90	Adeje	young	179	136	131	148.6	93	65	120	28	29	38	37	46	24	92
140	Candelaria	young	187	140	129	152	92	71	129	32	32	33	33	50	24.5	92
163	"	middle	184	142	135	153.6	95	68	124	35	33.5	40	40	49	24	89
187	"	young	185	148	132	155	102	70	123	33	33	39	39	48	26	92
204	"	middle	184	146	128	152.6	97	72	126	33	31	43	43	53	25	93
227	"	young	182	140	126	149.3	89	71	126	33	33	37.5	39	52	23	93
237	"	middle	186	145	130	153.6	96	65	126	32	31	43	42	48	25	89
259	Tamaimo	middle	175	134	129	146	92	66	(120)	33	33	37	37	45	22	90
374	Orotava	young	176	130	117	141	92	71	121	34	34	38	38	50	22	86
411	"	middle	176	128	128	144	86	60	121	30	29	37	37	43	23	91
426	"	young	173	131	127	143.6	89	63	(120)	29.5	29.5	36	34	46	25	91
729	Araya Candelaria	middle	180	141	135	152	94	68	131	35	35	39	38	49	22	93
768	S. Miguel	middle	181	145	121	149	96	61	122	32	32	39	39	48	26	88

Basion-Nasion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion-Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right	Orbital Index Left	Nasal Index	Exter Palat Inde
85	48	58	483	350	292	33×28	82.74	72.02	87.05	49.56	94.12	81.82–84.38		50.00	120.
99	50	60	509	357	292	39×31	73.63	69.78	94.78	53.66	90.91	92.11–94.59		45.10	120.
92	45	57	485	340	275	35×33	76.30	73.41	96.21	42.40	95.65	73.68–73.68		55.00	126.
92	?	?	510	370	305	33×28	79.44	70.56	88.81	(48.03)	93.48	80.56–83.33		48.94	?
(90)	45	58	491	(353)	292	?	79.53	72.51	91.18	55.08	(92.22)	86.84– ?		51.11	128.
97	?	?	516	363	298	35×29	75.94	67.38	88.73	49.59	92.78	81.01–83.12		50.00	?
92	?	?	493	350	280	35×31	77.59	70.11	90.37	?	(88.04)	81.58–83.78		53.66	?
96	51	59	518	364	312	42×30	77.90	73.48	94.33	49.19	97.92	81.58–79.49		45.65	115.
93	?	?	499	352	294	33×27	79.43	70.86	89.21	(51.26)	86.73	79.45–80.82		50.00	?
101	54	63	508	352	292	36×32	76.67	69.44	90.58	(50.81)	97.03	80.00–80.00		46.51	116.
95	46	56	485	350	286	38×33	76.30	69.36	90.91	(49.57)	96.84	86.66–89.04		46.51	121.
91	49	58	485	349	282	33×26	79.41	72.35	91.11	51.30	95.60	77.78–84.29		48.84	118.
89	50	53	497	368	290	32×29	77.14	71.43	92.59	52.99	96.63	89.86–91.43		46.51	106.
94	?	?	475	344	281	34×29	75.44	71.93	95.35	48.72	97.81	71.05–75.00		51.16	?
98	47	60	505	362	307	33×31	80.23	75.71	94.37	53.54	89.80	84.62–82.05		46.81	127.
92	?	?	499	368	300	33×28	76.54	69.83	91.24	52.50	98.91	77.92–77.92		53.33	?
96	?	?	508	364	295	36×26	76.67	70.56	92.03	48.00	97.92	78.95–78.95		51.11	?
95	?	?	487	345	292	35×29	75.57	69.32	91.73	?	97.89	80.00–87.18		53.49	?
87	?	?	490	355	283	34×34	77.65	70.59	90.91	?	(89.66)	88.89–86.11		48.89	?
98	52	61	494	345	282	39×33	76.14	71.02	93.28	53.72	95.92	82.05–82.05		43.75	117.
96	?	?	495	350	300	35×33	80.00	74.86	93.57	?	92.71	81.01– ?		43.75	?
95	50	58	499	353	287	35×32	74.44	70.56	94.78	49.59	97.89	81.58–79.49		53.66	116.
90	45	57	488	343	287	36×30	81.18	73.53	90.58	47.15	92.22	79.45–80.56		52.27	126.
90	?	?	498	351	293	33×26	80.46	70.69	87.86	56.44	95.56	83.33–90.91		50.00	?
90	?	?	(495)	?	305	?	81.50	71.68	87.94	52.54	90.00	83.78–83.78		52.27	?
(88)	47	57	479	288	290	?	80.95	(69.05)	(85.29)	57.76	(97.73)	84.21–84.21		50.00	121.
90	47	60	478	?	291	?	79.31	69.54	87.68	53.39	92.22	(80.56–86.96)		48.94	127.
100	54	62	497	352	282	34×30	76.84	69.49	90.44	55.37	99.00	87.84–84.21		46.00	114.

TABLE III. — MEASUREMENTS OF TENERIFE CRANIA. SEX DOUBTFUL

98	51	64	526	382	294	35×31	72.49	70.37	97.08	54.33	92.86	80.00–81.01		48.98	125
89	49	60	499	364	300	37×31	84.21	75.44	89.58	52.50	100.00	83.33–84.51		53.33	122
94	50	62	517	363	294	38×35	78.89	70.00	88.73	(51.59)	92.55	90.54–90.54		48.48	124
96	52	62	508	357	291	37×29	75.14	68.51	91.18	?	(93.75)	86.25– ?		42.31	119
97	57	62	516	355	297	37×32	78.33	70.56	90.07	50.00	97.94	79.22–79.22		48.00	108
97	53	62	496	360	284	33×27	75.98	73.18	96.32	54.17	94.85	73.68–78.38		52.17	116
97	55	68	524	375	292	34×30	74.87	68.98	92.14	55.04	94.85	96.97–96.97		49.00	123
99	51	62	514	370	305	36×30	77.17	73.37	95.07	54.84	89.90	87.50–83.75		48.98	121
101	53	63	531	365	309	37×34	80.00	71.35	89.19	56.91	91.09	84.62–84.62		54.17	118
96	55	65	524	370	312	37×32	79.35	69.57	87.67	57.14	96.88	76.74–72.09		47.17	118
98	51	62	507	?	298	?	76.92	69.23	90.00	56.35	94.90	88.00–84.82		44.23	121
99	49	62	(530)	(370)	307	38×30	77.96	69.89	89.66	51.59	89.90	74.42–73.81		52.08	126
97	50	60	493	351	279	38×33	76.57	73.71	96.27	(55.00)	92.78	89.19–89.19		48.89	120
94	51	66	488	341	278	34×29	73.86	66.48	90.00	58.68	91.49	89.47–89.47		44.00	129
93	?	?	476	353	286	38×30	72.73	72.73	100.00	49.59	97.85	81.08–78.38		53.49	?
92	51	60	484	345	?	?	75.72	73.41	96.95	(52.50)	98.91	81.95–86.76		54.35	117
96	53	66	514	360	290	38×37	78.33	75.00	95.74	51.91	96.88	89.74–92.11		44.90	124
93	48	57	517	?	298	?	80.11	66.85	83.45	50.00	94.62	82.05–82.05		54.17	118

TABLE IV. — MEASUREMENTS OF GOMERA CRANIA. MALE

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
47	?	middle	185	150	140	158.3	106	73	137	31	31	41	41	53	25	97
101	Bco. Mach.	middle	188	146	131	155	94	71	136	34	34	40	40	52	23	92
102	"	middle	183	135	136	151.3	94	66	137	29.5	30	41	41	47	24	103
107	Cueva del	middle	184	132	136	150.6	90	65	124	32	32	38	38	47	25	104
108	Funcal en	middle	189	136	132	152.3	97	74	135	31	32.5	42	42	55	26	105
110	Hermigua	young	179	145	133	152.3	101	63	?	33	33	38	38	46	23	88
111	"	middle	192	146	134	157.3	103	72	138	33	33	41	41	51	25	94
113	"	middle	170	136	130	145.3	94	65	131	33	33	38	38	47	24	90
114	"	middle	186	138	134	152.6	100	70	134	31	31	41	41	54	24	92
116	"	middle	180	143	126	149.6	100	66	138	28	28	37	37	49	26	96
263	?	old	185	142	137	154.6	104	?	?	?	31	?	40	48	24	?
265	?	middle	186	140	143	156.3	95	(65)	?	33	?	41	?	48	25	94
268	?	middle	186	138	136	153.3	95	62	134	31	31	40	40	45	23	94
269	?	young	179	134	129	147.3	97	60	130	27	27	38	38	49	24	96
270	?	middle	181	136	129	148.6	90	62	135	30	31	38	36	45	24	96
273	?	young	178	134	129	147	94	65	120	33	31	39	37.5	47	20	84
274	?	old	193	152	?	?	102	73	140	32.5	33	42	42	58	26	?
275	?	old	170	145	126	147	92	?	?	31	31	37	37	48	27	(89)
276	?	young	185	140	143	156	99	64	133	30	30	39	39	52	23	91
278	?	middle	181	143	130	151.3	99	75	(137)	32	32	40	40	53	27	98
279	?	middle	189	146	134	156.3	91	63	132	30.5	30	40	40	55	25	81
280	?	middle	171	132	132	145	93	63	126	31	32	42	41	51	23	98
281	?	young	173	143	129	148.3	96	64	125	32.5	32.5	39	38	45	23	95
282	?	old	172	142	121	145	100	69	?	29	?	37	?	51	25	86
285	?	young	177	140	125	147.3	96	69	133	31	32	40	40	51	24	98
289	?	middle	178	141	133	150.6	87	62	135	29	30	38.5	38.5	48	24	89
291	?	young	180	137	130	149	97	62	129	33	33	43	43	48	23	93
293	?	old	182	141	137	153.3	101	?	?	29	28	38	39	46	27	?
295	?	young	173	142	131	148.6	91	66	127	29.5	29.5	38	38	49	23	92
297	?	old	183	144	(131)	152.6	92	(64)	135	33	33	39	37	46	23	(93)
298	?	young	180	142	127	149.6	100	65	(135)	28	26.5	37	37	47	25	92
751	Jerian	old	191	144	136	157	95	69	135	29	30	39	39	51	22	95
753	"	old	187	148	132	155.6	96	(67)	135	29	28	40	40	49	27	(98)
754	"	young	176	137	122	145	94	60	126	27	29	37	37	47	24	92

TABLE IV. — MEASUREMENTS OF GOMERA CRANIA. MALE

Basion-Nasion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion-Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right Left	Nasal Index	Extern Palat Inde
103	55	65	522	368	318	41×35	81.08	75.68	93.33	53.28	94.17	75.61–75.61	47.17	118.1
100	54	66	518	367	300	39×34	77.66	69.68	89.73	52.20	92.00	85.00–85.00	44.23	122.2
107	56	62	502	354	297	38×35	73.77	74.32	100.74	48.17	96.26	71.95–73.17	51.06	110.7
102	55	57	507	371	298	42×34	71.74	73.91	103.03	52.42	101.96	84.21–84.21	53.19	103.6
107	58	62	518	370	292	37×32	71.96	69.84	97.06	54.81	98.13	73.81–77.38	47.27	106.9
94	50	59	517	369	310	36×34	81.01	74.30	91.72	?	93.62	86.84–86.84	50.00	118.0
102	60	65	540	382	304	42×34	76.04	69.79	91.78	52.17	92.16	80.49–80.49	49.02	108.3
94	54	60	491	345	300	37×32	80.00	76.47	95.59	49.62	95.74	86.84–86.84	51.06	111.1
101	52	64	520	369	(300)	36×34	74.19	72.04	97.10	52.24	91.09	75.61–75.61	44.44	123.0
96	57	65	519	366	307	36×29	79.44	70.00	88.11	47.82	100.00	75.68–75.68	53.06	114.0
100	?	?	(522)	(371)	313	34×29	76.76	74.05	96.48	?	?	? –77.50	50.00	?
104	52	62	520	380	314	37×33	75.27	76.88	102.14	?	90.38	80.49– ?	52.08	119.2
103	52	59	(514)	362	289	37×33	74.19	73.12	98.55	46.27	91.26	77.50–77.50	51.11	113.4
100	55	57	501	351	290	37×31	74.86	72.07	96.27	46.15	96.00	71.05–71.05	48.98	103.6
100	50	57	509	360	288	35×32	75.14	71.27	94.85	45.93	96.00	78.95–86.11	53.33	114.0
93	46	59	496	365	302	35×31	75.28	72.47	96.27	54.17	90.32	84.62–82.67	42.55	128.2
?	58	64	548	?	321	?	78.76	?	?	52.14	?	77.38–78.57	44.83	110.3
97	?	?	498	340	300	38×35	85.29	74.12	86.90	?	(91.75)	83.78–83.78	56.25	?
99	50	58	512	382	322	37×32	75.68	77.30	102.14	48.12	91.92	76.92–76.92	44.23	116.0
100	59	64	518	358	298	36×34	79.01	71.82	90.91	(54.74)	98.00	80.00–80.00	50.94	108.4
(96)	?	?	527	390	312	?	77.25	70.90	91.78	47.73	(84.38)	76.25–75.00	45.45	?
100	51	61	476	335	300	39×34	77.19	77.19	100.00	50.00	98.00	73.81–78.05	45.10	119.6
98	49	56	494	345	293	39×34	82.66	74.57	90.21	51.20	96.94	83.33–85.53	51.11	114.2
95	?	?	507	345	298	36×32	82.56	70.35	85.21	?	90.53	78.38– ?	49.02	?
102	51	60	502	334	290	37×32	79.10	70.62	89.29	51.88	96.08	77.50–80.00	47.06	117.6
96	52	57	500	367	311	34×31	79.21	74.72	94.33	45.93	92.71	75.32–77.92	50.00	109.6
101	48	58	502	352	300	36×30	76.11	72.22	94.89	48.06	92.08	76.74–76.74	47.92	120.8
103	?	?	518	369	311	34×31	77.47	75.27	97.16	?	?	76.32–71.79	58.70	?
97	49	60	496	345	295	36×34	82.08	75.72	92.25	51.97	94.85	77.64–77.64	46.94	122.4
99	?	?	514	365	305	40×36	78.69	(71.58)	(90.97)	(47.41)	(93.94)	84.62–89.19	50.00	?
93	55	62	516	362	296	36×30	78.89	70.56	89.44	(48.15)	98.92	75.68–71.62	53.19	112.7
107	?	?	534	370	306	39×35	75.39	71.20	94.44	51.11	88.79	74.36–76.92	43.14	?
99	?	?	534	385	315	35×32	79.14	70.59	89.19	(49.63)	(98.99)	72.50–70.00	55.10	?
94	50	61	500	345	288	38× ?	77.84	69.32	89.05	47.62	97.87	72.97–78.38	51.06	122.0

TABLE V. — MEASUREMENTS OF GOMERA CRANIA. FEMALE AND SEX DOUBTFUL

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
109	Hermigua	old	174	140	123	145.6	94	66	127	31	31	39	39	47	24	91
112	"	old	176	139	130	148.3	96	70	?	33	33	41	41	50	29	86
115	"	middle	172	?	?	?	96	60	?	32	32	38	38	46	25	?
266	?	middle	173	141	125	146.3	93	68	125	36	36	39	39	50	24	83
267	?	young	176	139	130	148.3	95	64	?	33	33	38	38	47	22	84
271	?	young	170	132	?	?	89	?	?	29	29	35	35	44	22	?
277	?	young	173	132	127	144	94	62	124	30	30	38	40	46	22	89
288	?	old	175	138	128	147	90	63	117	28	28	37	37	47	23	81
290	?	middle	168	138	121	142.3	93	66	(124)	30	30.5	37	37	49	22	90
292	?	old	174	142	127	147.6	95	65	131	32	34	39	39	47	25	95
294	?	old	175	139	128	147.3	93	62	124	30	30	37	37	43	22	88
296	?	old	178	141	136	151.6	91	63	?	33	33	39	36	48	25	90
103	Bco. Mach.	middle[1]	171	142	126	146.3	93	66	127	32	32	39	39	49	24	89
262	Miguama	old[1]	176	134	119	143	100	73	129	33	34	36	36	53	22	89
286	?	middle[1]	180	150	?	?	98	70	127	35	35	39	40	51	24	?
752	Jerian	old[1]	176	142	122	146.6	97	61	(127)	28	30	36	37	46	21	90

[1] Sex doubtful.

TABLE VI. — MEASUREMENTS OF GRAN CANARIA CRANIA. MALE

75	Galdar	young	180	135	132	149	93	67	?	?	31.5	?	39.5	50	25	90
454	Sta. Lucia[1]	middle	174	136	132	147.3	89	61	121	34	35	36	36	44	25	87
455	deTirajana	old	179	135	127	147	87	65	122	30	30	36.5	36.5	45	23	91
456	"	young	187	150	138	158.3	96	68	125	36	36	39	38	50	23	90
458	"	middle	192	142	125	153	98	67	135	33	34	42	40	47	25	92
459	"	old	184	137	127	149.3	99	67	?	31	31	39	38	48	25	95
460	"	old	179	127	124	143.3	98	68	128	32.5	32	39	39	50	24	92
461	"	middle	194	144	128	155.3	105	67	138	28	30	41	41	50	26	102
462	"	middle	195	144	134	157.6	104	76	136	32	32	41.5	41.5	54	27	103
463	"	middle	200	150	142	164	113	72	145	33	34	42	41	50	26	103
464	"	young	174	142	132	149.3	102	66	125	32	32	39	40	48	24	88
465	"	middle	182	141	129	150.6	97	70	131	30	30	42.5	38	48	24	99
467	"	middle	186	137	133	152	96	67	?	30	30	41	40	49	25	95
471	"	old	198	143	148	163	96	74	137	32.5	32	40.5	40	52	25	100
472	"	old	185	136	138	153	106	(76)	(136)	34	32	43	43	55	25	(99)
473	"	old	195	144	140	159.6	100	70	143	31	33	41	41	53	27	97
475	"	old	191	150	139	160	97	69	129	35	34	38	38	48	24	88
476	"	old	181	140	141	154	100	?	?	33	33	41	41	51	26	?
479	"	old	184	147	136	155.6	96	68	?	32	31	37	?	49	24	91
480	"	old	185	140	140	155	99	78	130	36	36	44	44	55	23	99

[1] Skulls 454–480 inclusive. "Cráneos de los aborigenes de Gran Canaria encontrados en cueva funeraria en Sta. Lucia de Tirajana. Comision de Juan Bethencourt."

TABLE V. — MEASUREMENTS OF GOMERA CRANIA. FEMALE AND SEX DOUBTFUL

Basion-Nasion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion-Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right	Orbital Index Left	Nasal Index	External Palatal Index
94	53	59	493	346	291	36×30	80.46	70.69	87.86	51.97	96.81	79.49–79.49		51.06	111.3
98	51	59	502	345	300	35×29	78.98	73.86	93.53	?	87.76	80.49–80.49		58.00	115.6
?	(50)	(59)	(484)	357	?	?	?	?	?	?	?	84.21–84.21		54.35	(118.0
90	?	?	500	354	292	36×29	81.50	72.25	88.65	54.40	92.22	92.31–92.31		48.00	?
94	45	55	499	355	298	34×30	78.98	73.86	93.53	?	89.36	86.84–86.84		46.81	122.2
?	50	60	480	351	283	?	77.65	?	?	?	?	78.95–75.00		50.00	120.0
92	50	59	486	357	293	35×31	76.30	73.41	96.21	50.00	96.74	75.68–75.68		47.83	118.0
94	?	?	495	362	292	33×31	78.86	73.14	92.75	53.85	86.17	81.08–82.43		48.94	?
96	52	55	485	330	288	35×32	82.14	72.02	87.68	(53.23)	93.75	82.05–87.18		44.90	105.7
97	?	?	503	346	292	35×32	81.61	72.99	89.44	49.62	97.94	81.08–81.08		53.19	?
92	?	?	496	359	299	35×32	79.43	73.14	92.09	50.00	95.65	84.62–91.67		51.16	?
93	?	?	503	370	305	37×30	79.21	76.40	96.45	?	96.77	?		52.08	?
96	50	60	495	350	302	32×26	83.04	73.68	88.73	51.97	92.71	82.05–82.05		48.98	120.0
96	?	?	497	342	280	36×27	76.14	67.61	88.81	56.59	92.71	91.67–94.44		41.51	?
?	48	59	520	365	308	?	83.33	?	?	55.12	?	89.74–87.50		47.06	122.9
95	?	?	506	353	284	33×31	80.68	69.32	85.92	(48.03)	94.74	77.78–81.08		45.65	?

TABLE VI. — MEASUREMENTS OF GRAN CANARIA CRANIA. MALE

97	50	64	504	366	292	36×31	75.00	73.33	97.78	?	92.78	? –79.75		50.00	128.0
95	48	56	490	358	297	35×29	78.16	75.86	97.06	50.41	91.58	94.44–97.22		56.82	116.6
97	?	?	491	355	292	34×27	75.42	70.95	94.07	53.28	93.81	82.19–82.19		51.11	?
100	48	61	522	382	312	35×27	80.21	73.80	92.00	54.40	90.00	92.31–94.74		46.00	127.0
102	51	66	526	365	297	35×28	73.96	65.10	88.03	49.63	90.20	78.57–85.00		53.19	129.4
98	?	?	513	376	301	32×28	74.46	69.02	92.70	?	96.94	79.49–81.58		52.08	?
98	51	62	497	354	281	37×29	70.95	69.27	97.64	53.13	93.88	83.33–82.05		48.00	121.5
104	59	66	537	383	311	37×32	74.23	65.98	88.89	48.55	98.08	68.29–83.17		52.00	111.8
107	60	67	533	387	307	35×29	73.85	68.72	93.06	55.88	96.26	77.11–77.11		50.00	111.6
111	61	69	559	395	328	41×32	75.00	71.00	94.67	49.65	92.79	78.57–82.93		52.00	113.1
100	47	55	508	358	311	34×29	81.61	75.86	92.96	52.80	88.00	82.05–80.00		50.00	117.0
94	55	63	511	378	321	35×28	77.47	70.88	91.49	53.44	105.32	73.17–78.95		50.00	114.5
102	52	65	512	365	295	39×32	73.66	71.51	97.08	?	93.14	73.17–75.00		51.02	125.0
110	?	?	539	390	312	39×30	72.22	74.75	103.50	54.01	90.91	80.24–80.00		48.08	?
109	?	?	514	?	310	?	73.51	74.59	101.47	(55.88)	(90.83)	79.07–74.42		45.45	?
105	57	66	540	385	315	39×33	73.85	71.79	97.22	48.95	92.38	75.61–80.49		50.94	115.7
97	54	61	534	388	313	35×30	78.53	72.77	92.67	53.49	90.72	92.11–89.47		50.00	112.9
100	?	?	515	370	311	38×34	77.35	77.90	100.71	?	?	80.49–80.49		50.98	?
101	?	?	519	375	315	35×31	79.89	73.91	92.52	?	90.10	86.49– ?		48.98	?
102	57	61	513	358	304	39×33	75.68	75.68	100.00	60.00	97.06	81.82–81.82		41.82	107.0

TABLE VII.—MEASUREMENTS OF GRAN CANARIA CRANIA. FEMALE AND SEX DOUBTFUL

Catalogue No.	Special Locality	Approximate Age of Subject	Glabello-Occipital Length	Maximum Width	Basion-Bregma Height	Cranial Module	Minimum Frontal Diameter	Alveon-Nasion Height (b)	Maximum Diameter Bi-zygomatic (c)	Orbits: Height		Orbits: Breadth		Nasal Height	Nasal Breadth	Basion-Alveon (x)
										Right	Left	Right	Left			
466	Sta. Lucia	old	169	135	136	146.6	95	64	124	30	31.5	37	37	47	24	94
469	de Tira-	middle	179	135	135	149.6	98	65	124	32	32	40	40	50	25	96
474	jana	young	181	129	128	146	96	67	121	34.5	35	39	39.5	50	22	89
477	"	young	176	133	124	144.3	88	63	121	30	29	36	36	47	23	90
478	"	old	178	139	129	148.6	94	?	123	31	31	37	37	48	24	?
804	"	young	177	133	131	147	99	63	117	31.5	31.5	38	38	48	24	92
468	"[1]	middle	183	140	135	?	97	72	128	31.5	33	42	40	52	28	89

[1] Sex doubtful.

TABLE VIII. — MEASUREMENTS OF HIERRO CRANIA. MALE

300	Cueva de	old	185	147	134	155.3	99	69	134	29	32	43	41	51	25	95
305	los Tables	middle	176	138	130	148	97	69	130	31	30	39	39	51	26	94
307	del Pino	young	180	142	134	152	96	63	124	30	29	37	38	45	24	92
308	"	old	179	139	?	?	102	66	131	35	35	42.5	42	49	26	?
309	"	old	187	143	126	152	92	64	134	34.5	34	39	39	49	27	92
310	"	young	179	130	128	145.6	94	64	121	36	35	42	40	50	24	94
724	?	young	180	137	126	147.6	104	63	128	29	29	37	37	45	27	88
725	?	old	174	131	125	143.3	94	66	120	30	30	38	38	44	23	88
726	?	middle	177	135	121	144.3	89	66	112	30	29	34	34	46	23	90
727	?	old	190	135	136	153.6	102	?	130	30	31	40	40	51	24	(90)
739	Dehesa	old	179	136	129	148	97	(61)	(124)	31	33.5	40	37	46	23	(90)
740	"	old	178	139	128	148.3	96	64	123	30	30	37	37	46	23	87
744	"	old	183	138	125	148.6	92	64	?	30	30	?	39	50	18	95

TABLE IX. — MEASUREMENTS OF HIERRO CRANIA. FEMALE

301	Cueva de	old	178	136	132	148.6	93	?	123	32	33.5	37	37	48	27	?
302	los Tables	young	176	131	131	146	91	69	117	32.5	31	37	37	50	24	97
304	del Pino	young	176	136	131	147.6	96	62	123	30	28.5	37	36	46	23	90
306	"	old	179	133	122	144.6	90	64	?	31	31	37	37	46	22	93
311	"	old	182	135	120	145.6	94	60	121	30	31.5	38	37	46	24	97
741	Dehesa	old	185	134	121	146.6	97	64	100	32	34	37	35.5	46	25	89
743	"	middle	177	131	122	143.3	93	64	(125)	32	32	36	35	44	24	98

TABLE X. — MEASUREMENTS OF FUERTEVENTURA AND LA PALMA CRANIA. MALE

484	Jandia[1]	old	(190)	144	130	154.6	101	67	?	31	34	39	38	52	23	92
728	?[1]	old	197	142	137	158.6	97	(72)	(141)	35	35	44	42	56	24	106
756	Fuencaliente[2]	middle	198	140	146	161.3	96	76	144	32	32	43	43	53	27	106

[1] Fuerteventura. [2] La Palma.

TABLE VII. — MEASUREMENTS OF GRAN CANARIA CRANIA. FEMALE AND SEX DOUBTFU

Basion-Nasion (y)	Palate: External Length	Palate: External Width	Maximum Circumference (above brow ridges)	Arc: Nasion Opisthion	Arc: Transverse	Foramen Magnum Diameters	Cranial Index	Height-Length Index	Height-Breadth Index	Facial Index Upper $\left(\frac{b \times 100}{c}\right)$	Gnathic Index $\left(\frac{x \times 100}{y}\right)$	Orbital Index Right	Orbital Index Left	Nasal Index	Externa Palata Index
103	?	?	483	351	306	35×30	79.88	80.47	100.74	51.61	91.26	81.08–85.13		51.06	?
101	52	66	505	359	305	36×31	75.42	75.42	100.00	52.42	95.05	80.00–80.00		50.00	126.9
96	47	55	503	365	287	36×30	71.27	70.72	99.22	55.37	92.71	88.46– ?		44.00	117.0
93	53	56	493	352	296	35×30	75.57	70.45	93.23	52.07	96.77	83.33–80.56		48.94	101.8
95	?	?	505	360	297	35×32	78.09	72.47	92.81	?	?	83.78–83.78		50.00	?
96	52	57	496	353	295	34×29	75.14	74.01	98.50	53.85	95.83	82.90–82.90		50.00	109.6
96	50	65	520	374	308	37×27	76.50	73.77	96.43	56.25	92.71	75.00–82.50		53.85	130.0

TABLE VIII. — MEASUREMENTS OF HIERRO CRANIA. MALE

103	?	?	519	370	317	38×32	79.46	72.43	91.16	51.49	92.23	67.44–78.05		49.02	?
101	52	(56)	505	346	299	36×29	78.41	73.86	94.20	53.08	93.07	79.49–76.92		50.98	(107.6
100	50	60	510	365	305	37×34	78.89	74.44	94.37	50.81	92.00	81.08–76.32		53.33	120.0
?	?	?	500	?	290	?	77.65	?	?	50.38	?	82.35–83.33		53.06	?
96	?	?	526	370	293	41×36	76.47	67.74	88.11	47.76	95.83	88.46–87.18		55.10	?
102	49	60	489	341	285	37×31	72.63	71.51	98.46	52.89	92.16	85.71–87.50		48.00	122.4
97	53	56	508	364	298	34×30	76.11	70.00	91.97	49.22	90.72	78.38–78.38		60.00	105.6
95	50	57	484	346	282	35×27	75.29	71.84	95.42	55.00	92.63	78.95–78.95		52.27	114.0
86	53	58	495	360	288	34×27	76.27	68.36	89.63	58.93	104.65	88.24–85.29		50.00	109.4
107	?	?	515	372	302	37×28	71.05	71.58	100.74	?	(84.11)	75.00–77.50		47.06	?
95	?	?	508	365	292	36×34	75.98	72.07	94.85	(49.19)	(94.74)	77.50–90.54		50.00	?
92	?	?	500	360	297	35×28	78.09	71.91	92.09	52.03	94.57	81.08–81.08		50.00	?
99	?	?	517	363	288	37×34	75.41	68.31	90.58	?	95.96	? –76.92		36.00	?

TABLE IX. — MEASUREMENTS OF HIERRO CRANIA. FEMALE

94	?	?	504	363	291	37×29	76.40	74.16	97.06	?	?	86.49–90.54		56.25	?
104	50	57	492	350	292	33×29	74.43	74.43	100.00	58.97	93.27	87.84–83.78		48.00	114.0
96	(47)	59	498	359	281	34×29	77.27	74.43	96.32	50.41	93.75	81.08–79.17		50.00	125.5
96	52	58	498	351	281	37×33	74.30	68.16	91.73	?	96.88	83.78–83.78		47.83	111.5
95	54	55	516	363	283	36×31	74.18	65.93	88.89	49.59	102.11	78,95–85.13		52.17	101.8
92	?	?	520	368	289	37×31	72.43	65.41	90.30	64.00	96.74	86.49–95.77		54.35	?
93	55	59	494	360	288	31×27	74.01	68.93	93.13	(51.20)	105.38	88.89–91.43		54.55	107.2

TABLE X. — MEASUREMENTS OF FUERTEVENTURA AND LA PALMA CRANIA. MALE

100	?	?	(535)	386	314	34×30	75.79	(68.42)	90.28	?	92.00	79.49–89.47		44.23	?
112	?	?	536	374	300	35×30	72.08	69.54	96.48	51.06	94.64	79.55–83.33		42.86	?
113	60	66	538	394	321	39×32	70.71	73.74	104.29	52.77	93.81	74.42–74.42		50.94	110.0

TABLE XI. — CRANIAL OBSERVATIONS. TENERIFE. MALE

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
1	med. met. sut.	med.	med.	st.	med.	½ closed	½ closed	½ closed	1 sm. r.	1 med. r.	—	—	H	2 sm.	sm.	sm.	sm.	?	med.	sharp	—	med.	r. com.
2	ret.	med.	comp.	prot.	med.	open	open	open	sev. med.	—	—	1 r. epipt.	K	—	med. div.	med.	deep	h.	med.	dull	—	low	sm.
3	med.	med.	med.	prot.	compl.	½ closed	½ closed	open	sev. sm.	—	—	—	H	2 sm.	lr.	med.	deep	h.	nar.	sharp	—	v. low	—
4	ret.	br., el.	comp.	med. in. lr.	med.	½ closed	½ closed	½ closed	1 lr. r.	—	—	—	l. H r. ret.	2 med.	v. lr.	sm. gl. lr.	med.	med.	med.	dull	—	low	r. com.
5	med.	med.	comp.	st.	compl.	almost closed	almost closed	¾ closed	—	—	—	—	H	2 med. l.	med.	lr.	sm.	h.	nar.	sharp	—	med.	—
6	prot.	med. el.	comp. cr. lr.	med.	compl.	open	open	open	sev. sm.	1 lr. r.	—	—	H	1 sm. l.	lr.	sm.	med.	h., br.	br.	dull	med.	med.	—
10	prot.	br.	prot.	med.	med.	½ closed	½ closed	½ closed	sev. sm.	1 r.	—	—	H	2 sm.	med.	med.	deep	med.	med.	sharp	—	sm.	—
11	prot.	br.	med.	med.	compl.	½ closed	½ closed	½ closed	sev. sm.	—	—	—	H nar.	1 lr. 1 sm.	sm.	med.	med.	h. nar.	v. nar.	dull	—	low	r. and l. com.
7	h., br.	med.	prot.	med.	med.	almost closed	almost closed	almost closed	—	—	—	—	l. H r. ret.	1 r.	sm.	—	sm.	med.	med.	sharp	—	h.	—
12	h., prot.	br.	med.	prot.	med.	almost closed	almost closed	almost closed	sev. med.	—	—	1 l. epipt.	H	2 med.	med.	med.	med.	h. nar.	med.	dull	—	low	—
13	ret.	med. dep.	comp.	st.	med.	begun	begun	begun	sev. sm.	—	—	1 sm. l.epipt.	H nar.	2 sm.	med.	sm.	—	h. med.	med.	sharp	—	med.	r. and l. com.
16	h.	br.	med.	prot.	compl.	open	open	open	2 lr. r. 2 l.	—	—	—	H	1 sm. l. 2 sm. r.	v. lr.	med.	deep	med.	med.	med.	—	h.	r. and l. com.
17	low, nar. ret.	med.	comp.	st.	compl.	almost closed	almost closed	almost closed	many	—	—	1 r. epipt.	H	1 sm. l.	lr.	med.	sm.	h. nar.	nar.	sharp	sm.	med.	l. com.
18	prot. med. el.	br., fl.	comp.	med.	compl.	open	open	open	few sm.	1 sm. l.	—	—	H	2 med.	sm.	sm.	sm.	h. nar.	med.	dull	—	med.	r. and l. com.
19	med.	br.	comp.	st. in. lr.	compl.	begun	begun	begun	sev. sm.	—	1 sm. l.	trans. sut.	H	2 sm.	lr.	med.	sm.	h. nar.	nar.	sharp	—	low	r. com.
21	med.	med.	comp.	med.	med.	almost closed	almost closed	½ closed	—	—	—	—	H	2 sm.	med.	med.	deep	h. nar.	nar.	sharp	—	low	—
22	low, br. met. sut.	br., fl.	prot.	st.	med.	begun	begun	begun	few sm.	1 r.	2 r. 1 l.	—	H	1 sm. l.	lr.	sm.	sm.	h. nar.	med.	sharp	—	low	r. and l. com.
26	br., nar.	br.	comp.	med.	med.	open	open	open	sev. med.	—	—	1 sm. epipt.	H	1 sm. r.	lr.	sm.	med.	?	nar.	dull	—	h.	r. and l. com.

TABLE XI.—CRANIAL OBSERVATIONS. TENERIFE. MALE

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts, — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
1	sm.	sm.	sm.	—	com.	all lost a.m.	?	absc.	Ω	deep	med.	med.	med.	lr.	—	—	—	Medit.	2 lr. les. healed r. front.
2	sm.	sm.	lr.	—	com.	good sl. worn	4–4–3	l., r. 3 m.imp.	Λ	deep	lr.	med.	med.	med.	—	—	—	Guanche	—
3	sm.	v. lr.	lr.	sm.	com.	good	4–4–3	—	Ω h.	deep	sm.	med.	med.	med.	worn	—	—	Guanche	old les. l. front. above orb. 2 cm., absc. l. antr.
4	med.	med.	lr.	sm.	com.	worn	4–4–3	—	Λ h.	deep p.g.p.	sm.	—	—	?	—	—	—	Medit. massive	—
5	med.	sm.	sm.	sm.	com.	v. worn	4–4–3	absc.	Ω	deep p.g.p.	sm.	med.	med.	med.	v. worn	—	—	?	dep. r. front. from blow
6	med.	lr.	med.	med.	com.	lost a.m.	?	—	Ω torus	deep p.g.p.	lr.	med.	med.	med.	v. worn	—	—	Guanche	—
10	med.	sm.	med.	med.	com.	poor	?	absc.	Λ	deep	med.	—	—	?	—	—	—	Medit.	asymmetric
11	med.	sm.	sm.	—	com.	good v. worn	4–4–3	absc.	Ω	deep	sm.	med.	med.	?	v. worn	—	—	Guanche	nas. bones affected
7	sm.	sm.	sm.	sm.	com.	good	4–4–3	—	Ω	deep	med.	med.	med.	med.	worn	—	—	Medit. massive	—
12	med.	med.	?	med.	com.	poor v. worn	?	many absc.	Ω h.	deep p.g.p. lr.	sm.	med.	med.	med.	worn	—	—	Medit.	—
13	sm.	sm.	sm.	sm.	com.	med.	4–4–3	—	Ω	deep p.g.p.	sm.	med.	med.	med.	worn	—	—	Medit.	cont. l. front.
16	deep	r. div.	med.	pron.	com.	good	4–4–3	—	Ω h.	deep p.g.p. lr.	—	med.	lr.	med.	lr.	—	1 sm. l.	Guanche	—
17	sm.	lr.	v. lr.	med.	com.	good	4–4–4	—	Ω h.	deep p.g.p.	lr.	sm.	med.	med.	worn	ind.	—	Guanche	—
18	med.	med.	med.	med.	com.	2 lost a.m.	4–4–3	—	Ω	med. p.g.p.	brok.	sm.	sm.	med.	—	—	—	Medit. small	—
19	sm.	sm.	med.	—	com.	sev. lost a.m.	4–4–	—	Λ h. torus	deep p.g.p. lr.	v. lr.	med.	med.	med.	worn	1 r. com.	1 med. r.	Guanche	2 dep. les. r. front., nas. fract.
21	med.	med.	med.	sm.	com.	good	4–4–3	—	Ω	deep p.g.p.	lr.	sm.	med.	med.	worn	1 r. ind.	—	Guanche	—
22	med.	med.	med.	—	com.	good	4–4–3	—	Ω h.	deep p.g.p. lr.	sm.	sm.	med.	lr.	worn	2 com.	—	near Alpine	—
26	sm.	med.	med.	sm.	com.	good	?	?	Ω torus	med. p.g.p. lr.	?	—	med.	med.	—	—	1 sm. l.	Medit.	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
27	low	med.	comp.	med.	med.	½ closed	½ closed	⅓ closed	sev.	—	—	—	H	1 sm.	med.	med.	sm.	br.	v. br.	dull	pron.	h.	r. and
29	low, ret.	med.	med.	fl.	v. compl.	almost closed	almost closed	begun	med. few sm.	—	—	—	H	r. 1 sm. r.	lr.	med.	med.	med. h. nar.	med.	sharp	—	low	l. com. —
30	h., prot.	prot. v. br.	comp.	fl.	compl.	open	open	open	sev. sm.	—	—	—	2 ret.	—	lr.	sm.	—	br., fl.	med.	dull	—	low	—
31	br., med. met. sut.	br., fl.	med.	st.	compl.	almost closed	almost closed	begun	few sm.	few sm.	—	—	H	—	sm.	sm.	sm.	h. med.	med.	dull	—	v. h.	—
33	med. med. el.	med.	prot.	prot.	compl.	open	open	begun	—	1 sm. l.	1 sm. r.	—	H	2 med.	lr.	sm.	med.	h. nar.	med.	sharp	—	low	—
35	med.	med. p.c.d.	comp.	st.	med.	begun at pt.	begun at obel.	begun	—	1 sm. r.	1 sm. l.	—	H	1 sm. l.	med.	med.	med.	med.	med.	sharp	—	low	—
36	?	br., lr. p.c.d.	comp.	prot. v. fl.	compl.	almost closed	almost closed	⅔ closed	many sm.	—	—	—	H	—	med.	sm.	med.	br. med.	br.	dull	—	low	—
38	br. med.	med.	med.	prot. v. fl.	v. compl.	open	open	open	—	—	—	—	H	med.	lr.	med.	sm.	h. nar.	nar.	sharp	—	h.	—
39	h., br.	v. br. fl.	med.	prot. v. fl.	med.	begun at pt.	begun at obel.	begun	1 sm.	—	—	—	H	1 lr.	lr.	med.	sm.	med.	br.	dull	—	med.	?
40	med.	med.	med.	v. prot.	v. compl.	open	open	open	many lr.	—	—	2 r., 1 l. epipt.	H	—	med.	sm.	deep	med.	med.	sharp	—	low	—
41	med.	med.	med.	prot.	simple	begun	begun	begun	3 lr.	1 med.	—	—	r. ret.	2 sm.	med.	med.	deep	h. nar.	med.	sharp	—	h.	—
42	ret.	br.	med.	st.	compl.	begun	begun	begun	sev. sm.	—	—	—	—	2 med.	lr.	lr.	deep	h. nar.	nar.	dull	pron.	low	—
45	med.	br., fl.	prot.	fl.	med.	begun	begun	open	sev. lr.	—	—	—	H	—	lr.	med.	med.	h. nar.	med.	sharp	—	h.	r. and
47	br., ret. met. sut.	med.	prot.	med.	compl.	begun at pt.	begun at obel.	open	sev. med.	1 sm. r.	—	1 sm. r. epipt.	H	2 sm.	med.	med.	med.	h. nar.	nar.	sharp	—	low	l. com. —
53	ret.	br., el. med.	med.	prot. torus	med.	begun at pt.	½ closed	open	few sm.	1 med. r.	—	—	H	1 med.	med.	med.	deep	h. nar.	med.	sharp	—	h.	—
54	low, br.	med.	prot.	v. prot.	v. compl.	open	open	open	many lr.	sev. lr.	—	1 lr. int. pr.	H	1 sm. r.	med.	sm.	sm.	h. nar.	nar.	sharp	—	h.	r. and
56	h., prot.	br., fl.	comp.	med.	compl.	begun at pt.	begun at obel.	open	sev. sm.	—	—	—	H	1 sm.	lr.	med.	deep.	h. nar.	br.	—	pron.	low	l. com. —
57	low, prot. met. sut.	br. p.c.d.	med.	med.	v. compl.	begun	begun	begun	—	—	—	1 med. l. epipt.	H	1 sm.	med.	med.	sm.	h. nar.	med.	sharp	—	med.	r. and
60	low, ret.	med.	comp.	med.	med.	begun at pt.	begun at obel.	?	—	—	—	—	K	1 sm.	v. lr.	lr.	med.	h. nar.	med.	dull	sm.	med.	l. com. —

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
27	?	sm.	sm.	?	com.	most lost a.m.	?	—	?	med. p.g.p.	sm.	—	sm.	?	worn	—	—	Medit.?	scler. l. front. near cor.
29	?	med.	med.	?	com.	sev. lost v. worn	?	absc. l. ant.	Ω	deep p.g.p.	med.	—	med.	?	—	—	—	near Nordic	—
30	med.	sm.	sm.	pron.	com.	good	4–4–3	—	Ω h.	deep p.g.p.	sm.	—	lr.	?	—	—	—	Negroid	—
31	med.	sm.	sm.	—	com.	med.	4–3–3	irreg. erup.	Ω	deep p.g.p.	med.	—	—	?	—	—	—	Nordic	—
33	med.	sm.	sm.	med.	com.	irreg. worn	4–3–3	—	Ω	deep p.g.p. lr.	lr.	med.	med.	?	—	—	2 sm. r.	Guanche?	—
35	med.	lr.	v. lr.	sm.	com.	good sl. worn	4–3–3	—	Ω h.	deep p.g.p. lr.	med.	med.	med.	med.	—	l. ind.	1 sm. r.	Guanche	les. ext. ang. proc. from blow
36	—	sm.	lr.	med.	com.	poor	?–3–3	absc.	Ω torus	med.	?	?	?	?	—	1 r. and 1. com.	—	Negroid heavy	—
38	deep	lr.	lr.	sm.	com.	good sl. worn	4–4–4	—	Ω h.	med.	?	med.	med.	med.	worn	—	1 med. l.	Guanche	—
39	sm.	lr.	?	?	com.	lost p.m. chiefly	?	absc.	Ω	deep p.g.p.	?	sm.	sm.	?	—	—	—	Guanche	les. l. orb. and front., healed fract. near cor.
40	med.	lr.	lr.	sm.	com.	good sl. worn	4–4–3	—	Ω h.	deep p.g.p. lr.	sm.	med.	med.	med.	—	—	1 sm. r.	Guanche	3 cont. l. pari.
41	deep	lr.	lr.	?	com.	alv. proc. abs.	?	—	?	deep p.g.p. lr.	lr.	med.	med.	med.	—	—	1 sm. r.	Guanche	—
42	sm.	med.	med.	sm.	com.	v. good worn	4–4–3	—	Ω h.	deep p.g.p.	med.	sm.	med.	med.	worn	—	—	Guanche	—
45	sm.	med.	med.	—	com.	sev. lost a.m.	?	2 absc.	Ω	deep p.g.p. lr.	med.	lr.	lr.	med.	worn	ind.	—	Guanche	dep. fract. r. pari.
47	med.	med.	med.	med.	com.	good	4–4–3	—	Ω	deep p.g.p.	v. lr.	sm.	sm.	lr.	worn	—	1 sm. r.	near Nordic	—
53	deep	med.	med.	pron.	com.	med.	4–3–2	—	Λ h.	deep p.g.p. lr.	sm.	sm.	sm.	lr.	worn	—	—	near Nordic	les. l. ext. ang. proc. from blow
54	deep	med.	?	med.	3 m. imp. erup.	good	4–5–3	?	Ω h.	deep p.g.p.	med.	med.	med.	med.	worn	—	—	near Nordic	dep. les. r. front. and above lamb.
56	sm.	lr.	lr.	med.	com.	caries poor	?	absc.	Ω h.	deep	sm.	sm.	sm.	med.	—	—	—	near Nordic	—
57	med.	med.	med.	med.	com.	caries poor	?	red.	Ω h.	deep p.g.p. lr.	sm.	sm.	sm.	med.	worn	—	—	Guanche	—
60	med.	v. lr.	v. lr.	med.	com.	good	4–4–4	—	Ω h.	deep	lr.	med.	med.	med.	worn	—	—	?	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
61	low, br.	med.	comp.	st.	compl.	begun	begun	begun	4 lr.	sev. lr.	—	lr. l. epipt.	H	2 med.	v. lr.	v. lr.	deep	med.	br.	med.	sm.	h.	—
62	med.	med.	comp.	st.	med.	begun	begun	begun	few sm.	2 med.	—	—	H	—	med.	med.	med.	h. nar.	nar.	sharp	—	h.	—
63	low, ret.	br. tub. lr.	comp.	prot.	simple	½ closed	½ closed	½ closed	—	2 sm.	—	—	H	1 med.	lr.	lr.	med.	h. nar.	nar.	dull	sm.	v. h.	—
64	h., nar.	med.	med.	st.	compl.	begun	begun	begun	few sm.	few sm.	—	—	H	2 sm.	med.	med.	med.	h. nar.	nar.	sharp	—	h.	r. and l. com.
66	med.	br.	med.	prot.	compl.	begun	begun	begun	many lr.	—	—	1 r. epipt.	H	2 sm.	med.	lr.	med.	h. nar.	med.	dull	pron.	h.	—
67	low, br.	br.	med.	med.	compl.	begun	begun	begun	many lr.	few sm.	—	—	H	2 sm.	med.	med.	sm.	h. nar.	nar.	indist.	pron.	h.	l. com.
68	med. met. sut.	br. tub. lr.	comp.	prot.	compl.	open	begun	open	few sm.	—	—	—	H	—	lr.	sm.	sm.	med.	med.	sharp	—	med.	r. com.
74	low, med. el.	br.	comp.	med.	med.	⅔ closed	⅔ closed	open	—	—	—	—	H	1 sm.	med.	lr.	med.	med.	med.	dull	—	low	—
76	low, br.	br.	med.	prot.	med.	almost closed	closed	open	—	—	—	—	H	2 med.	lr.	sm.	sm.	med.	nar.	sharp	—	h.	—
78	low, br. med. el.	br.	prot.	prot.	compl.	begun at pt.	begun at obel.	½ closed	—	—	—	—	H	1 lr. 1 sm.	lr.	v. lr.	deep	h. nar.	nar.	sharp	—	h.	—
80	med.	br.	med.	prot.	compl.	open	open	open	—	—	—	—	H	1 sm.	lr.	med.	med.	h. nar.	nar.	sharp	—	low	—
83	h., br. met. sut.	br.	prot.	?	med.	begun	begun	begun	—	2 med.	—	4 epipt.	H	1 sm.	med.	med.	med.	med.	nar.	dull	—	low	—
85	low, ret.	br.	prot.	med.	med.	open	open	open	sev. sm.	—	—	—	H	1 sm.	v. lr.	lr.	med.	h. nar.	nar.	indist.	sm.	med.	—
88	low, ret.	br.	prot.	med.	med.	almost closed	almost closed	open	sev. sm.	sev. sm.	—	—	H	—	med.	med.	med.	med.	med.	dull	—	h.	—
91	nar., ret. med. el.	med.	med.	med.	compl.	begun at pt.	begun	open	few sm.	—	—	—	H	—	lr.	med.	med.	h. nar.	med.	sharp	—	h.	r. com.
92	br., prot. met. sut.	br. p.c.d.	prot.	med. in. lr.	compl.	open	open	open	many sm.	sev. sm.	2 med.	2 lr. l. 1 sm. r. epipt.	H	3 sm.	med.	sm.	sm.	med.	med.	sharp	—	h.	r. and l. com.
94	nar. prot.	br. prot. p.c.d.	med.	st.	med.	open	open	open	few sm.	1 med.	—	1 r. epipt.	K	—	lr.	med.	sm.	h. nar.	nar.	dull	sm.	med.	—
95	h., v. br. med.	v. br. platy.	prot.	st.	compl.	begun at pt.	open	open	sev. med.	sev. sm.	1 med.	1 sm. l.epipt.	H	3 med.	lr.	med.	med.	h. nar.	nar.	sharp	—	med.	r. and l. com.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
61	med.	med.	med.	?	com.	all lost a.m.	?	—	?	deep p.g.p.	sm.	lr.	lr.	med.	worn	—	—	Guanche	—
62	med.	sm.	sm.	sm.	com.	med. worn	?	—	∩	deep p.g.p. lr.	lr.	med.	sm.	med.	worn	—	—	Medit.	—
63	med.	?	?	sm.	com.	?	?	—	∩	med.	lr.	sm.	sm.	med.	—	—	—	Guanche?	—
64	med.	sm.	med.	sm.	com.	poor	?	3 m. abs. absc.	∩	deep p.g.p. lr.	med.	sm.	sm.	med.	worn	—	—	Medit.	—
66	deep	med.	sm.	pron.	com.	?	?	absc.	∩	deep p.g.p. lr.	med.	med.	med.	med.	worn	—	—	Guanche	—
67	sm.	v. lr.	v. lr.	pron.	com.	med.	?	—	∩ h.	med. p.g.p.	sm.	lr.	med.	med.	worn	ind.	1 sm. r.	near Nordic	—
68	med.	med.	med.	med.	com.	lost p.m.	?	—	∩	deep p.g.p.	sm.	sm.	sm.	med.	worn	—	—	Guanche	—
74	deep	med.	sm.	med.	com.	med. worn	4–4–3	absc.	∩ h.	deep p.g.p. lr.	lr.	sm.	med.	med.	worn	—	—	Guanche	dep. fract. l. pari.
76	med.	med.	med.	med.	com.	worn	?	absc.	∩	deep	?	?	med.	?	—	—	1 r.	near Medit.	—
78	deep	med.	med.	pron.	com.	?	?	—	∩	deep p.g.p. lr.	lr.	med.	?	med.	—	—	—	Guanche	healed lin. fract. occ.
80	sm.	med.	med.	med.	?	?	?	—	∩	deep p.g.p. lr.	v. lr.	?	?	med.	—	—	1 r.	near Nordic	—
83	sm.	med.	v. lr.	?	com.	lost a.m.	?	—	∩	deep p.g.p. lr.	sm.	lr.	med.	med.	—	—	—	Guanche	—
85	deep	med.	med.	med.	3 m. imp. erup.	good	4–4–4	—	∩ h.	deep p.g.p. lr.	med.	sm.	med.	sm.	worn	l. and r. com.	—	Guanche	—
88	deep	lr.	lr.	pron.	com.	sev. lost v. worn	?	—	∩	deep p.g.p. lr.	lr.	sm.	med.	med.	worn	—	—	Guanche	—
91	?	med.	med.	?	com.	alv. proc. abs.	4–4–3	—	∩	p.g.p. lr. arth.	sm.	med.	med.	med.	worn	—	—	Medit.	—
92	deep	med.	med.	pron.	com.	good	4–4–2	absc.	Λ	deep p.g.p. lr.	lr.	med.	sm.	med.	worn	—	—	near Nordic	—
94	med.	lr.	lr.	med.	com.	med. v. worn	?	absc.	∩ h.	p.g.p.	lr.	med.	med.	med.	worn	—	—	?	—
95	med.	sm.	sm.	pron.	com.	good	4–4–3	—	Λ v. h.	deep p.g.p.	lr.	v. lr.	lr.	lr.	worn	ind.	—	near Nordic	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
96	h., v. br. med.	v. br.	prot. t. p. s. obl.	prot.	compl.	begun at pt.	begun at obel.	open	sev.[1] sm.	1 sm.	—	—	H	1 sm.	lr.	med.	med.	med.	br.	sharp	—	med.	—
98	med.	med.	med.	prot.	compl.	½ closed	½ closed	½ closed	many med.	sev. sm.	—	os. breg.	H	2 sm.	sm.	lr.	med.	h. nar.	nar.	sharp	—	med.	—
99	h., med.	med.	med.	med.	med.	open	open	open	—	—	—	—	H	2 v. sm.	med.	sm.	sm.	med.	med.	dull	ind.	h.	r. and l. com.
100	br. med.	v. br.	med.	med.	compl.	open	begun at obel.	open	few[1] sm.	—	—	1 l. epipt.	H	—	lr.	lr.	med.	h. nar.	nar.	dull	—	v. h.	—
105	low, br. ret.	med.	prot.	med.	v. compl.	begun at pt.	½ closed	begun	—	2 med.	—	—	H	1 sm.	med.	lr.	med.	med.	nar.	sharp	—	med.	r. and l. com.
117	br. med.	br. p.c.d.	prot. t. p. s. obl.	med.	med.	open	open	open	—	—	—	—	H	2 sm.	lr.	lr.	med.	med.	nar.	dull	—	v. h.	—
118	nar., ret.	med.	comp.	med.	compl.	begun at pt.	begun	open	—	—	—	—	H	2 med.	v. lr.	lr.	med.	med.	br.	dull	pron.	h.	r. com.
119	h., br.	br.	prot. torus	prot.	med.	open	open	open	Inca div.	—	—	2 lr. epipt.	H	1 med.	lr.	lr.	deep	med.	med.	sharp	—	low	—
120	br., med. el.	v. br.	prot.	med.	compl.	begun at pt.	begun at obel.	begun	—	—	—	—	H	—	lr.	med.	med.	med.	nar.	dull	—	med.	r. and l. com.
121	h., prot. med. el.	nar. scf.	comp.	prot.	med.	open	closed [premat.]	open	sev. sm.	—	—	1 lr. epipt.	H	—	med.	med.	med.	med.	med.	sharp	—	low	—
122	br. med.	br. p.c.d.	prot.	med. in. lr.	med.	begun at pt.	begun at obel.	begun	sev. lr.	sev. sm.	—	—	H	—	lr.	med.	med.	br.	med.	sharp	—	h.	r. com.
123	br. med.	br.	prot.	med.	compl.	begun	begun	begun	sev. sm.	sev. sm.	—	4 v. lr. epipt.	H	2 sm.	lr.	sm.	med.	h. nar.	nar.	indist.	pron.	h.	r. and l. com.
124	h., br. med. el.	br. p.c.d.	med.	prot. in. lr.	med.	begun at pt.	begun at obel.	begun	Inca	1 med.	—	—	H	1 lr. 1 sm.	lr.	med.	med.	br. med.	br.	sharp	—	low	r. and l. com.
125	h., br. prot.	br., fl.	prot.	st.	med.	begun at pt.	begun at obel.	open	sev. lr.	few sm.	—	—	H	2 sm.	lr.	med.	deep	med.	nar.	dull	sm.	med.	—
126	low, br. prot.	br., fl.	med. t. p. s. obl.	med. torus	med.	almost closed	almost closed	begun	few med.	—	—	—	H	2 sm.	med.	med.	deep	med.	nar.	sharp	—	med.	—
127	low, nar. ret.	br. p.c.d.	med. s. m. p.	prot. in. lr.	simple	begun at pt.	⅓ closed	⅓ closed	few sm.	—	—	—	H	1 sm.	med.	lr.	med.	h. nar.	br.	dull	—	low	r. com.
128	low, nar.	br. tub. lr.	—	prot. torus	med.	open	open	open	many lr., sm.	few sm.	few sm.	—	H	1 sm.	v. lr.	med.	med.	med.	nar.	sharp	—	med.	r. and l. com.

[1] Transverse suture indicated.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts, — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
96	?	sm.	sm.	?	com.	lost	?	—	?	deep arth. p.g.p.	med.	sm.	sm.	sm.	worn	—	2 lr. l.	Alpine	—
98	?	sm.	sm.	pron.	com.	lost	?	—	?	deep p.g.p.	med.	lr.	med.	med.	worn	ind., sp. proc. lr.	—	near Nordic	—
99	—	sm.	sm.	med.	3 m. imp. erup.	good	4–4–4	—	Ω	deep p.p.g.sm.	sm.	sm.	med.	med.	—	2 com. sp. proc. lr.	—	Medit.	—
100	med.	sm.	lr.	pron.	com.	v. good	4–4–4	—	Λ h. torus	deep arth.	lr.	med.	med.	med.	arth.	—	—	near Nordic	—
105	?	lr.	lr.	—	com.	caries poor	?	absc.	Ω	deep p.g.p.sm.	med.	med.	lr.	med.	arth.	ind.	—	Guanche	healed lin. fract. r. temp.
117	med.	sm.	med.	med.	com.	good	4–4–4	—	Ω	deep p.g.p. lr.	sm.	med.	med.	med.	—	sp. proc. lr.	1 sm. r.	near Nordic	—
118	med.	med.	med.	pron.	com.	good	4–4–3	—	Λ h. torus	deep	med.	sm.	med.	med.	—	—	—	near Nordic	fract. l. malar
119	med.	med.	med.	pron.	imp. erup.	good	4–4–4	—	Ω h. torus	deep p.g.p.	med.	med.	med.	med.	—	—	—	Guanche	—
120	med.	med.	v. lr.	pron.	com.	good	4–4–3	—	Λ h.	deep p.g.p. lr.	v. lr.	sm.	med.	med.	—	—	—	Guanche	old cut over r. orb.
121	med.	med.	med.	med.	com.	good	4–4–4	absc.	Λ h. torus	p.g.p. lr.	v. lr.	med.	lr.	lr.	—	—	—	?	scaphoid
122	sm.	med.	med.	med.	com.	good sl. worn	4–4–3	—	Ω h.	deep p.g.p. lr.	med.	sm.	med.	med.	arth.	ind.	—	Guanche	—
123	med.	med.	med.	med.	com.	good sl. worn	4–4–3	—	Λ h. torus	deep p.g.p.sm.	sm.	med.	med.	med.	worn	—	—	near Nordic	—
124	deep	med.	v. lr.	med.	com.	good	4–4–4	—	Ω h. torus	deep p.g.p. lr.	sm.	med.	lr.	med.	worn	—	—	Guanche heavy	—
125	med.	med. div.	med.	med.	com.	med. worn	4–4–3	supt. inc.	Ω	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	Guanche	—
126	med.	sm.	sm.	med.	com.	good	4–4–3	c. uner.	Ω h.	deep	med.	med.	med.	med.	—	—	—	near Nordic	—
127	med.	med.	med.	med.	com.	good	4–4–3	—	Ω	deep p.g.p. lr.	sm.	med.	med.	med.	—	—	—	Guanche	—
128	med.	med.	v. lr.	med.	com.	good	4–4–3	—	Λ h.	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	near Guanche	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
130	h.	br.	med.	med.	compl.	½ closed	⅔ closed	½ closed	few sm.	—	—	—	H	1 lr.	sm.	med.	sm.	low,br.	med.	indist.	sm.	med.	r. and l. com
131	br. med.	br.	prot.	prot.	med.	open	open	open	sev. lr.	—	—	1 sm. l. epipt.	H	—	v. lr.	med.	med.	med.	nar.	sharp	—	low	r. and l. com.
133	h., br.	br.	med.	med.	med.	begun at pt.	begun at obel.	open	few sm.	—	—	—	H	2 sm.	sm.	sm.	med.	sm.	nar.	sharp	sm.	med.	—
134	h., br.	br.	prot.	med.	v. compl.	closed	begun	begun	few sm.	few sm.	—	—	H	1 sm.	lr.	lr.	med.	h. nar.	nar.	dull	—	low	r. com.
135	med.	br.	comp.	med.	compl.	⅓ closed	½ closed	open	1 sm.	—	—	—	H	—	med.	med.	med.	h. nar.	med.	sharp	—	med.	—
136	br. med.	br.	prot.	med. in. lr.	compl.	begun at pt.	begun	open	many lr.	—	—	—	H	2 sm.	v. lr.	med.	med.	h. nar.	nar.	sharp	—	h.	r. and l. com.
137	h., br.	br.	prot.	med.	compl.	begun	begun	begun	many sm.	few sm.	—	—	H	2 sm.	v. lr.	sm.	sm.	h. nar.	nar.	sharp	—	low	l. com.
138	br., ret.	v. br.	prot.	med.	compl.	begun	begun	begun	many sm.	?	—	—	H	?	v. lr.	med.	med.	med.	br.	sharp	—	med.	—
141	low, nar. ret.	med.	comp. s.m.p.	prot. torus	med.	open	open	open	few sm.	—	—	—	H	2 sm.	med.	med.	med.	h. nar.	med.	dull	sm.	med.	r. and l. com.
142	br., med.	br.	med.	med.	compl.	½ closed	½ closed	open	many med.	—	—	1 lr. l. epipt.	H	—	lr.	lr.	med.	h. nar.	nar.	sharp	—	low	r. com.
143	br., med.	br.	med.	med.	compl.	begun at pt.	begun at obel.	begun	—	—	—	—	H	—	v. lr.	med.	med.	med.	med.	med.	—	low	r. and l. com.
144	med.	med.	med.	med.	compl.	begun at pt.	begun at obel.	open	sev. sm.	—	—	—	H	1 med.	med.	lr.	deep	h. nar.	nar.	med.	sm.	low	r. and l. com.
145	h., br. med. el.	br.	prot.	prot.	compl.	open	open	open	sev. med.	—	—	—	H	—	v. lr.	sm.	sm.	med.	br.	sharp	—	low	r. and l. com.
146	med. met. sut. med. el.	br. p.c.d.	med.	med.	med.	almost closed	almost closed	open	1 lr. sev. sm.	—	—	—	H	2 sm.	lr.	sm.	sm.	med.	br.	dull	sm.	h.	r. and l. com.
147	h., br.	br.	med.	med.	compl.	open	open	open	many [1] lr.	—	—	1 lr. l. epipt.	H	—	v. lr.	med.	med.	low,br.	nar.	sharp	—	low	r. and l. com.
148	low, br. prot.	br.	med.	med.	compl.	open	open	open	few sm.	—	—	—	H	—	med.	sm.	sm.	med.	br.	sharp	—	h.	r. and l. com.
149	h., br. prot.	br.	prot.	med.	v. compl.	open	open	open	—	—	—	—	H	2 sm.	lr.	med.	sm.	med.	med.	med.	—	low	l. com.
150	h., nar.	br. tub. lr.	comp.	prot.	med.	closed	closed	½ closed	few sm.	?	—	—	H	2 med.	med.	med.	med.	h. nar.	med.	sharp	—	h.	—

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts.—Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
130	med.	med.	med.	med.	com.	good worn	?	—	Ω h.	deep	lr.	sm.	sm.	med.	—	ind.	—	near Nordic	—
131	med.	v. lr.	v. lr.	med.	com.	good	4–4–4	—	Ω h. torus	deep p.g.p. lr.	sm.	med.	med.	med.	—	—	—	Guanche	—
133	sm.	med.	med.	pron.	com.	good	4–4–4	—	Ω h.	deep p.g.p. lr.	lr.	med.	med.	med.	—	—	—	Guanche	—
134	med.	med.	med.	med.	com. 3 m. red.	good	4–4–	—	Λ h.	?	v. lr.	?	?	?	—	—	—	Guanche	—
135	med.	sm.	sm.	med.	com.	worn	?	absc.	Ω h.	med.	sm.	sm.	med.	med.	—	—	—	near Nordic	old les. mid. front.
136	deep	lr.	sm.	med.	com.	lost p.m.	?	—	Ω	med. arth.	?	lr.	lr.	med.	worn	—	—	Guanche	old les. r. front.
137	deep	lr.	v. lr.	med.	com. 3 m. red.	good	4–4–3	—	Λ	deep p.g.p. lr.	lr.	lr.	lr.	med.	—	—	—	Guanche	—
138	med.	lr.	lr.	pron.	com.	good	4–4–4	—	Ω h.	deep p.g.p. lr.	sm.	sm.	med.	med.	—	—	—	Guanche	—
141	sm.	v. lr.	v. lr.	med.	com.	good	4–4–3	—	Ω h. torus	deep p.g.p. sm.	?	med.	med.	med.	—	—	—	Guanche	—
142	v. deep	lr.	lr.	med.	com.	good	4–4–4	—	Ω h.	deep p.g.p. lr.	sm.	med.	med.	med.	worn	—	—	Guanche	—
143	med.	lr.	lr.	pron.	com.	good	4–4–4	—	Λ h. torus	deep p.g.p.	v. lr.	sm.	med.	lr.	arth.	sp. proc. v. lr.	—	Guanche	old les. l. front.
144	med.	lr.	lr.	pron.	com.	good	4–4–3	—	Ω	deep p.g.p. lr.	v. lr.	med.	med.	med.	—	—	—	Guanche	—
145	med.	med.	sm.	pron.	3 in. imp. erup.	good	4–4–4	—	Ω	deep p.g.p. lr.	v. lr.	med.	med.	med.	—	—	—	Guanche	—
146	deep	sm.	sm.	pron.	com.	med. worn	?	—	Ω h.	deep	sm.	sm.	sm.	sm.	—	1 r.	—	Guanche	—
147	v. deep	lr.	med.	med.	3 m. red.	good	4–4–	—	Ω h.	deep p.g.p. lr.	med.	sm.	sm.	med.	—	sp. proc. lr.	—	Guanche	—
148	sm.	med.	med.	med.	3 in. imp. erup.	worn	4–3–4	—	Ω	deep p.g.p. lr.	sm.	med.	med.	med.	—	sp. proc. lr.	—	Guanche	—
149	med.	lr.	lr.	sm.	com.	med.	4–4–4	lr. absc.	Λ h.	med. p.g.p.	sm.	med.	med.	med.	—	r. and l. com.	1 lr. r.	Guanche	old les. mid. front.
150	med.	sm.	sm.	sm.	com.	med.	?	absc.	Ω h.	deep p.g.p.	med.	med.	med.	med.	arth.	sp. proc. lr.	—	near Guanche	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
151	br., prot. med. el.	br. p.c.d.	prot.	med.	med.	open	open	open	few lr.	1 lr. r.	—	1 lr. r. epipt.	K	1 sm.	lr.	sm.	—	h. nar.	med.	sharp	—	h.	r. and l. com.
152	br. med.	br.	prot.	med.	med.	open	open	open	sev.[1] sm.	—	—	—	H	—	lr.	med.	sm.	med.	med.	sharp	—	med.	r. and l. com.
153	med.	med.	med.	med.	med.	begun at pt.	begun at obel.	open	—	—	—	—	H	2 sm.	med.	med.	sm.	med.	med.	sharp	—	h.	—
155	low, br. med. el.	v. br.	prot.	med. in. lr.	med.	open	open	open	sev. med.	sev. sm.	—	—	H	1 med.	lr.	lr.	deep	low, br.	br.	dull	—	h.	r. and l. com.
157	br. med. el.	br.	prot.	med.	simple	½ closed	¼ closed	open	few sm.	—	—	—	H	1 sm.	med.	sm.	sm.	br. med.	med.	sharp	—	low	—
158	br. met. sut.	br.	med.	med.	compl.	begun	begun	begun	few sm.	—	—	—	H	2 sm.	v. lr.	med.	med.	med.	med.	dull	sm.	med.	r. and l. com.
159	br., prot. med. el.	br.	prot.	med.	compl.	closed	closed	¾ closed	many sm.	—	—	—	H	1 sm.	v. lr.	—	—	med.	br.	sharp	—	low	r. and l. com.
160	h., br. met. sut.	br.	med.	med.	med.	begun at pt.	begun at obel.	open	3 sm.	1 sm.	—	—	ret.	1 med.	med.	—	med.	h. nar.	nar.	dull	med.	h.	r. and l. com.
161	h., nar. med. el.	med.	med.	prot.	med.	open	open	open	?	few sm.	?	1 lr. r. epipt.	H	1 med.	v. lr.	sm.	—	med.	nar.	indist.	lr.	med.	r. and l. com.
162	nar. prot.	br.	med.	med.	med.	open	open	open	sev. lr.	—	—	—	H	—	lr.	med.	med.	h. nar.	med.	indist.	med.	med.	r. com.
165	h., med.	br., sm. p.c.d.	med.	st.	compl.	open	open	open	sev.[1] sm.	—	—	—	H	2 sm.	sm.	lr.	med.	med.	med.	sharp	—	med.	—
166	h., prot.	br.	med.	med.	med.	begun at pt.	½ closed	begun	—	2 med.	—	—	H	1 sm.	lr.	med.	med.	h. nar.	med.	indist.	ind.	h.	—
167	low, br.	br., fl. tub. lr.	med. s.m.p. lr.	med.	med.	almost closed	almost closed	open	sev. med.	—	—	—	H	1 sm.	lr.	lr.	med.	br. med.	med.	dull	—	low	—
168	h. med. el.	med.	med.	med.	med.	begun at pt.	begun	open	sev. med.	—	—	—	H	—	lr.	med.	sm.	h. nar.	med.	sharp	sm.	med.	—
169	low, br.	med.	prot.	med.	compl.	open	open	open	1 lr.	—	—	—	H	—	med.	lr.	med.	med.	nar.	sharp	—	h.	r. and l. com.
171	h., nar. met. sut.	nar.	med.	prot.	med.	begun at pt.	begun at obel.	open	few sm.	—	—	1 sm. epipt.	H	1 sm.	lr.	med.	med.	h. nar.	br.	sharp	—	low	r. and l. com.
172	h., br. met. sut.	v. br.	comp.	prot. in. v. lr.	compl.	open	begun	open	many med.	few sm.	—	1 lr. l. epipt.	H.	1 sm.	lr.	med.	med.	med.	med.	sharp	—	med.	—
173	h., br.	v. br. p.c.d.	prot.	med.	compl.	⅔ closed	almost closed	begun	sev. med.	—	—	—	H	2 sm.	med.	sm.	sm.	h. nar.	med.	sharp	—	h.	r. com.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posteria Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
151	med.	sm.	sm.	med.	com.	good	4–4–3	m. ret.	?	deep p.g.p.	sm.	med.	sm.	med.	worn	sp. proc. lr.	—	Guanche	old les. l. front.
152	med.	lr.	lr.	med.	3 m. abs.	med. sl. worn	?	—	∩	deep p.g.p. lr.	sm.	med.	med.	med.	—	—	—	Guanche	—
153	med.	med.	med.	med.	com.	lost p.m.	?	—	∩	deep	med.	med.	med.	med.	—	sp. proc. lr.	—	near Nordic	healed dep. fract. l. pari.
155	med.	med.	med.	med.	com.	good	4–4–3	—	∩ h.	deep p.g.p.	med.	med.	lr.	med.	arth.	—	—	Guanche	les. glab., r. sup. orb., l. pari.
157	med.	lr.	lr.	lr.	com.	poor	?	absc. caries	∩	deep p.g.p. lr.	sm.	med.	med.	lr.	arth.	—	—	Guanche	—
158	med.	lr.	lr.	med.	com.	good	4–4–4	r.c.ret. m. uner.	∩ h.	deep p.g.p.	med.	med.	med.	med.	—	—	—	Guanche	les. l. pari.
159	med.	med.	sm.	sm.	com.	worn.	?	—	∩	deep	med.	med.	med.	sm.	arth.	ind.	—	near Nordic	—
160	med.	med.	med.	sm.	com.	poor worn	?	absc.	∩	deep p.g.p.	med.	med.	med.	lr.	worn	—	—	Guanche	—
161	med.	med.	med.	med.	com.	good	4–4–3	—	∩ h.	deep p.g.p. lr.	med.	sm.	med.	lr.	worn	sp. proc. lr.	—	near Nordic	l. pari. and occ. brok.
162	med.	med.	v. lr.	med.	com.	v. good	4–4–4	—	∩	med. p.g.p.	med.	sm.	sm.	lr.	worn	r. and l. com.	—	near Nordic	—
165	med.	lr.	lr.	med.	com.	good	4–4–	—	∩ torus	deep p.g.p. lr.	sm.	sm.	sm.	med.	—	—	—	near Nordic	—
166	med.	v. lr.	v. lr.	sm.	com.	good	4–4–3	—	∩ h.	deep p.g.p.	med.	med.	med.	med.	—	r. com.	—	near Nordic	—
167	?	v. lr.	v. lr.	?	com.	most lost a.m.	?	—	∩	deep	lr.	med.	med.	sm.	—	—	—	Guanche	—
168	deep	med.	med.	med.	com.	v. good	4–4–4	—	∩ h.	deep arth.	lr.	med.	med.	med.	—	—	—	near Nordic	healed dep. fract. r. front.
169	?	sm.	sm.	?	?	most lost a.m.	?	l. c. uner.	?	med., sm. p.g.p.	?	med.	med.	med.	arth.	sp. proc. lr.	—	near Nordic?	—
171	med.	med.	med.	med.	com.	med.	4–4–3	—	Λ	deep arth.	lr.	med.	med.	med.	arth.	l. ind.	—	near Nordic	—
172	med.	med.	lr.	sm.	com.	good	4–4–4	—	∩ h.	deep p.g.p. lr.	lr.	med.	sm.	med.	—	—	—	Guanche	—
173	?	lr.	lr.	?	com.	all lost a.m.	?	—	?	deep p.g.p. lr.	sm.	med.	med.	med.	—	—	—	Guanche	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
175	h., br.	br. p.c.d.	prot.	prot.	med.	begun at pt.	begun	open	few sm.	1 med. r.	—	—	H	—	lr.	sm.	sm.	med.	med.	med.	—	h.	l. com.
176	br., prot. met. sut.	v. br. prot. p.c.d.	med.	prot. in. v. lr.	med.	begun at pt.	½ closed	⅓ closed	many lr., sm.	few sm.	—	2 lr. epipt.	?	—	lr.	med.	sm.	h. med.	med.	sharp	—	med.	—
177	med.	med.	med.	med.	compl.	open	open	open	few sm.	—	—	—	H	2 sm.	med.	sm.	sm.	h. nar.	sm.	sharp	—	med.	r. com.
178	low, br. prot.	br. p.c.d.	prot.	med.	compl.	open	open	open	3 med.[1]	—	—	1 sm. r. epipt.	H	2 sm.	lr.	med.	med.	med.	br.	indist.	pron.	med.	r. and l. com.
179	v. h. med.	med.	med.	med.	med.	open	open	open	few sm.	—	—	os. breg.	H	1 med.	med.	sm.	med.	med.	nar.	sharp	—	low	r. and l. com.
181	h., br. prot.	br., fl.	prot.	prot.	med.	open	open	open	2 med.	2 sm.	—	—	H	2 sm.	sm.	med.	med.	h. nar.	v. nar.	sharp	—	h.	r. and l. com.
183	br., ret. med.	br.	med.	med.	med.	begun at pt.	begun at breg.	open	—	—	—	—	H	1 med.	med.	lr.	deep	br. med.	med.	sharp	—	low	—
185	h., br. prot.	br.	med.	med.	med.	begun at pt.	½ closed	begun	few sm.	—	—	—	H	2 med.	med.	med.	med.	med.	br.	dull	—	low	—
186	h., br. med. el.	med. p.c.d.	med.	med.	compl.	begun at pt.	⅓ closed	open	many sm.	few sm.	—	—	H	1 lr. 1 sm.	lr.	med.	med.	h. nar.	med.	sharp	—	h.	—
188	h., med.	br.	med.	med.	compl.	open	open	open	few sm.	few sm.	—	1 l. epipt.	H	—	lr.	med.	med.	med.	med.	dull	—	low	r. and l. com.
189	low, med. ret.	med.	med., s. m. p. lr.	med.	compl.	open	open	open	few med.	—	—	—	H	—	lr.	lr.	med.	med.	nar.	dull	ind.	v. low	r. and l. com.
190	prot. med. el.	v. br. p.c.d. sm.	prot.	med.	med.	open	open	open	med.[1]	few sm.	—	—	H	—	lr.	med.	med.	br. med.	med.	sharp	—	low	—
191	h., med.	med. p.c.d.	comp.	med.	med.	almost closed	½ closed	begun	few sm.	—	—	—	H	—	med.	med.	deep	h. nar.	v. nar.	dull	—	h.	r. and l. com.
192	v. h., br. med. el. met. sut.	br. tub. lr.	med.	med.	med.	begun at pt.	begun at obel.	open	sev. med.	—	—	—	H	1 med.	lr.	med.	med.	h. nar.	nar.	dull	sm.	med.	—
193	prot. met. sut.	br. p.c.d.	med.	med.	simple	open	open	open	sev. sm.	—	2 med.	—	H	1 med.	sm.	sm.	sm.	h. nar.	nar.	sharp	—	h.	l. com.
194	br. med.	v. br. p.c.d. sm.	prot.	prot.	simple	open	begun at obel.	begun	few sm.	—	—	—	H	—	v. lr.	med.	sm.	br. med.	br.	sharp	—	low	l. com.
195	h., med. prot.	br. p.c.d.	med.	prot.	med.	½ closed	⅓ closed	begun	sev. lr.	—	—	—	H	2 sm.	lr.	lr.	deep	h. nar.	nar.	sharp	—	med.	l. com.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts.—Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
175	med.	sm.	sm.	med.	com.	good	4–4–3	inc. er. r. c.	∩ v. h.	deep arth.	lr.	med.	med.	med.	—	—	—	Guanche	—
176	sm.	v. lr.	v. lr.	sm.	com.	med.	?	absc.	∩ h.	deep	v. lr.	med.	med.	med.	arth.	—	—	Guanche	—
177	sm.	sm.	sm.	sm.	com.	good	4–4–4	—	∩	deep p.g.p.sm.	sm.	sm.	sm.	med.	—	—	—	Nordic	—
178	med.	sm.	sm.	med.	com.	good sl. worn	4–4–3	—	∩ torus	deep p.g.p.	lr.	med.	med.	med.	arth.	—	—	Guanche	—
179	med.	sm.	sm.	med.	3 m.imp. erup.	good	4–4–4	—	∩	deep	sm.	med.	med.	med.	—	—	1 r.	near Nordic	—
181	med.	med.	med.	med.	com.	good	4–3–3	—	∩	deep p.g.p.sm.	sm.	med.	med.	med.	—	ind.	—	near Nordic	les. l. front.
183	med.	med.	med.	med.	com.	worn	4–4–3	—	∩	deep	sm.	sm.	med.	med.	arth.	ind.	—	Guanche	—
185	deep	med.	med.	med.	com.	good	4–4–	—	∩	deep p.g.p. lr.	lr.	med.	med.	med.	arth.	—	—	Guanche?	—
186	med.	med.	v. lr.	med.	com.	good	4–4–3	—	∩	deep arth.	med.	med.	med.	med.	arth.	—	sev. lr.	near Nordic	—
188	deep	v. lr. l. div.	v. lr.	pron.	com.	good	4–4–3	—	∩ torus	deep p.g.p. lr.	sm.	med.	med.	med.	—	sp. proc. lr.	—	?	—
189	med.	lr.	lr.	pron.	com.	good	4–4–4	—	Λ	deep p.g.p. lr.	v. lr.	med.	med.	med.	—	ind.	—	near Guanche	—
190	deep	v. lr.	v. lr.	pron.	3 m. imp. erup.	good	4–4–3	—	Λ	deep p.g.p. lr.	med.	med.	sm.	med.	—	l. com.	—	Guanche	—
191	v. deep	v. lr.	v. lr.	pron.	com.	good worn	4–4–4	—	∩	deep arth.	med.	med.	med.	med.	—	—	—	near Nordic	—
192	med.	v. lr.	v. lr.	pron.	com.	good worn	4–4–3	—	∩	deep arth.	med.	sm.	med.	med.	arth.	—	—	near Guanche	—
193	med.	v. lr.	v. lr.	sm.	com.	med. worn	?	—	Λ	deep arth.	sm.	sm.	sm.	med.	—	sp. proc. lr.	—	near Nordic	—
194	deep	v. lr.	v. lr.	med.	com.	good	4–4–4	—	∩	deep arth.	med.	med.	?	lr.	arth.	sp. proc. lr.	1 sm. l.	Guanche	—
195	deep	sm.	sm.	med.	com.	good	4–4–4	—	∩ h.	deep p.g.p.	sm.	med.	med.	med.	arth.	ind.	—	near Nordic	—

Catalogue No.	Cranial Vault				Sutures.—Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagital Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
196	h., med. med. el.	scf., sm. p.c.d.	comp.	med.	med.	open	open	open	many lr.	sev. sm.	—	1 lr. r. epipt.	H	1 med.	med.	med.	med.	h. nar.	nar.	sharp	—	med.	—
197	h., med.	sm. p.c.d.	med.	med.	simple	begun at pt.	⅓ closed	begun	sev. lr.	—	—	—	H	1 sm.	v. lr.	med.	med.	med.	med.	sharp	—	med.	r. and l. com.
198	nar. med.	br. p.c.d.	comp.	med. in. lr.	compl.	open	open	open	sev.[1] med.	—	—	—	K	2 med.	lr.	sm.	sm.	med.	—[2]	?	?	h.	—
201	br., med. met. sut.	v. br. sm. el.	prot.	prot.	compl.	begun at pt.	closed	begun	many med.	—	—	—	K	2 med.	med.	med.	med.	med.	med.	sharp	—	med.	—
202	low, br.	v. br. p.c.d.	prot.	med. in. v.lr.	simple	½ closed	½ closed	begun	—	few sm.	—	—	H	2 sm.	lr.	med.	sm.	h. nar.	med.	sharp	—	h.	r. and l. com.
206	br., med. med. el.	br.,sm. p.c.d.	s.m.p. lr.	med.	compl.	open	open	open	—	—	—	1 r. epipt.	K	2 sm.	lr.	v. lr.	med.	?	med.	dull	—	med.	r. com.
207	med.	med.	med.	med.	med.	open	open	open	sev. lr.	—	—	—	H	—	med.	med.	lr.	h. nar.	nar.	dull	—	h.	—
208	med.	sm. p.c.d.	med.	prot.	compl.	begun at pt.	begun at obel.	begun	2 sm.	—	—	—	H	2 med.	lr.	lr.	med.	med.	med.	sharp	—	h.	—
210	nar. med.	med. el.	comp.	med.	compl.	almost closed	closed	open	few sm.	few sm.	—	—	H	2 sm.	med.	med.	med.	h. nar.	med.	dull	—	med.	—
211	low, nar. ret.	med. el.	comp.	med.	compl.	almost closed	closed	½ closed	sev. sm.	—	—	1 sm. r. epipt.	H	2 sm.	med.	torus	lr.	h. nar.	nar.	sharp	—	h.	—
212	med. med. el.	med. el.	comp.	med.	compl.	open	open	open	many lr., sm.	—	—	—	K	2 sm.	lr.	lr.	lr.	med.	med.	dull	—	med.	l. com.
213	h., br. met. sut.	br.,sm. p.c.d.	prot.	med.	compl.	open	open	open	many lr.	sev. med.	—	1 l. epipt.	H	1 sm.	med.	sm.	sm.	h. nar.	nar.	sharp	—	h.	r. and l. com.
214	h., med. med. el.	br., el. med.	med.	prot. in. lr.	v. compl.	open	open	open	Inca	—	—	1 sm. l. epipt.	H	1 sm.	v. lr.	med.	sm.	?	med.	sharp	—	h.	—
216	med. ret.	v. br.	s.m.p. v. lr.	med. in. lr.	compl.	almost closed	closed	begun	sev. med.	—	—	—	H	2 sm.	v. lr.	lr.	lr.	br.	med.	sharp	—	med.	r. and l. com.
217	med.	br.	comp.	med. in. lr.	med.	closed	closed	begun	few sm.	—	—	—	H	2 med.	v. lr.	sm.	sm.	?	br.	dull	—	low	r. com.
218	h., br.	br.,sm. p.c.d.	prot.	med.	compl.	begun	begun	open	few sm.	—	—	—	H	—	lr.	med.	sm.	med.	med.	sharp	—	h.	—
220	h., br.	br.	med.	prot.	v. compl.	open	begun	open	sev. med.	—	—	—	H	1 sm.	med.	med.	med.	h. nar.	nar.	sharp	—	h.	r. and l. com.
221	low, br. ret.	med.	med.	med.	med.	almost closed	closed	open	few sm.	few sm.	—	—	H	1 sm	lr.	lr.	deep	h. nar.	br.	sharp	—	med.	l. com.
222	br., med. med. el.	br. p.c.d.	med.	med.	med.	begun at pt.	begun at obel.	open	few med.	—	—	—	H	1 med.	lr.	med.	deep	med.	med.	indist.	ind.	low	—

[2] Left side of nasal floor expanded sloping downward. Pathological growth involving both antra and portion of orbital cavity. Left side of palate disproportionately large.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
196	deep	v. lr.	v. lr.	sm.	com.	good	4–4–4	—	Ω h.	deep p.g.p.	lr.	med.	med.	med.	—	sp. proc. lr.	—	?	—
197	?	lr.	lr.	sm.	com.	sl. worn	4–4–4	2 absc.	Ω h.	deep arth.	med.	med.	med.	med.	arth.	sp. proc. lr.	—	near Nordic	—
198	?	med.	v. lr.	?	com.	med.	4–4–4	—	Ω torus	deep p.g.p. lr.	sm.	sm.	lr.	med.	—	sp. proc. lr.	—	near Nordic	—
201	?	v. lr.	v. lr.	pron.	com.	lost a.m.	?	absc. r. antr.	Ω	med. p.g.p. lr.	med.	med.	med.	med.	—	sp. proc. lr.	—	Guanche	—
202	med.	v. lr.	v. lr.	?	com.	good	4–4–3	—	Λ	deep p.g.p. lr.	med.	med.	med.	med.	arth.	ind.	—	near Guanche	—
206	sm.	v. lr.	v. lr.	med.	com.	good	4–4–3	—	Ω	deep p.g.p.	med.	med.	med.	med.	arth.	—	—	Guanche	—
207	med.	med.	med.	med.	com.	good	4–4–4	—	Ω h.	v. deep p.g.p. sm.	lr.	med.	med.	med.	—	r. com.	—	near Nordic	—
208	med.	lr.	lr.	med.	com.	good	4–4–4	—	Ω h.	deep p.g.p.	sm.	sm.	sm.	med.	—	—	—	near Guanche	—
210	sm.	med.	med.	sm.	com.	good	?	—	Ω	deep p.g.p. lr.	lr.	med.	lr.	med.	arth.	—	—	near Guanche	old les. glab.
211	v. deep	sm.	sm.	pron.	com.	v. good worn	4–4–4	—	Λ h.	deep p.g.p. lr.	sm.	med.	med.	lr.	—	ind.	—	Australoid	—
212	med.	lr.	lr.	med.	com.	med. worn	?	—	Ω h.	deep p.g.p. sm.	lr.	med.	med.	med.	—	ind.	—	Guanche	—
213	sm.	sm.	sm.	sm.	?	good	4–4–	absc. 3 m.	Ω h.	deep p.g.p. lr.	lr.	sm.	med.	med.	—	sp. proc. lr.	—	near Nordic	—
214	?	med.	med.	med.	com.	med. sl. worn	4–4–3	caries	Ω	shallow arth.	med.	med.	med.	med.	arth.	—	—	near Guanche	—
216	med.	v. lr.	v. lr.	sm.	com.	med. worn	?	—	Ω	deep p.g.p. lr.	sm.	med.	med.	med.	—	ind.	—	Guanche	les. r. max. fr. breg.
217	sm.	med.	med.	med.	com.	good worn	?	—	Ω	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	near Nordic	—
218	med.	med.	med.	sm.	com.	good	4 4–3	—	Λ h.	deep p.g.p. lr.	lr.	med.	med.	med.	—	sp. proc. lr.	—	near Nordic	—
220	deep	med.	med.	med.	com.	good	4–4–4	—	Ω	deep p.g.p.	med.	med.	med.	med.	—	—	—	near Nordic	—
221	med.	lr.	lr.	?	com.	caries poor	?	r. in. absc.	Ω	deep p.g.p.	med.	lr.	med.	lr.	—	ind.	—	Guanche	—
222	sm.	v. lr.	v. lr.	pron.	com.	med. worn	?	—	Ω h.	p.g.p. lr. arth.	med.	med.	med.	med.	arth.	—	—	Guanche	—

Catalogue No.	Cranial Vault				Sutures, — Ossification				Wormian Bones								Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others	Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
223	lr., med. ret.	br., el. med.	med.	med.	med.	open	begun at obel.	open	many lr.	1 lr. r.	—	5 lr. interp.	K	2 sm.	v. lr.	lr.	deep	med.	nar.	sharp	—	low	r. and l. com.
224	low, br. ret.	br., el. p.c.d. sm.	comp.	med.	med.	open	open	open	sev. sm.	—	—	—	H	—	lr.	med.	deep	med.	med.	dull	—	med.	r. and l. com.
225	med.	med.	comp.	med.	med.	open	open	open	few sm.	—	—	2 med. epipt.	H	2 sm.	lr.	med.	med.	h. nar.	nar.	sharp	pron.	low	l. com.
226	low, br. prot.	br., fl. p.c.d.	prot.	med.	compl.	open	open	open	few sm.	—	—	1 sm. interp.	H	—	lr.	sm.	med.	nar. med.	nar.	sharp	—	med.	—
228	br. med.	br.,sm. p.c.d.	prot.	prot.	compl.	open	open	open	sev. med.	sev. sm.	—	—	H	1 sm.	med.	med.	sm.	med.	med.	sharp	ind.	low	r. and l. com.
229	med. ret.	med.	med.	med. in. lr.	v. compl.	open	begun at obel.	open	few med.	—	—	4 med. epipt.	H	1 sm.	lr.	lr.	med.	h. nar.	nar.	sharp	—	med.	r. and. l. com.
230	h. nar.	br.,sm. p.c.d.	comp.	prot.	med.	open	open	open	many lr.	sev. lr.	—	3 lr. epipt.	H	2 sm.	med.	med.	med.	h. nar.	med.	sharp	—	low	—
231	low, br. med. el.	br. el.	med.	med.	compl.	open	open	open	few sm.	—	—	—	H	2 sm.	med.	lr.	med.	h. nar.	nar.	med.	—	med.	r. and l. com.
233	h., br. ret.	br. el.	comp.	med.	compl.	begun at pt.	almost closed	begun	sev. sm.	—	—	—	H	—	lr.	lr.	deep	med.	nar.	sharp	—	med.	—
236	low, br. ret.	med.	med.	med.	simple	closed	begun	begun	sev. lr.	—	—	—	H	1 sm.	v. lr.	v. lr.	v. deep	low	med.	dull	—	v. low	—
238	h., br. ret.	br. p.c.d.	med.	prot.	med.	open	open	open	3 Inca	—	—	—	H	2 sm.	lr.	med.	med.	h. nar.	nar.	dull	—	med.	r. and l. com.
241	br., med. ret.	br.	med.	med.	med.	open	open	open	few sm.	—	—	—	r. H l. ret.	—	med.	lr.	med.	med.	med.	sharp	—	med.	r. and l. com.
242	br. med.	br.,sm. p.c.d.	prot.	med.	med.	begun at pt.	almost closed	begun	few sm.	—	—	1 r. epipt.	H	2 sm.	lr.	med.	med.	med.	nar.	sharp	—	med.	—
243	low, med. ret.	med. p.c.d.	med.	med.	compl.	begun	½ closed	open	—[1]	—	—	os. breg.	H	1 sm.	med.	v. lr.	med.	h. nar.	nar.	sharp	—	h.	r. and l. com.
244	med.	med.	comp.	prot.	med.	open	open	open	few sm.	—	2 med.	1 sm. l. epipt.	K	1 sm.	med.	med.	med.	h. nar.	med.	sharp	ind.	med.	r. and l. com.
246	br. med.	med.	comp.	med.	simple	almost closed	almost closed	begun	2 sm.	—	—	—	H	1 sm.	lr.	med.	med.	?	br.	sharp	—	h.	—
249	br. med.	br.,sm. p.c.d.	med.	med.	med.	closed	closed	closed	—	—	—	—	—	2 sm.	lr.	med.	—	med.	med.	dull	med.	med.	—
251	low, br.	v. br.	med.	med.	v. compl.	open	open	open	few sm.	—	—	—	H	2 sm.	med.	med.	med.	med.	nar.	sharp	—	low	r. and l. com.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
223	sm.	v. lr.	v. lr.	pron.	com.	good worn	4–4–4	—	∩	deep arth.	lr.	lr.	sm.	med.	arth.	—	—	Guanche	—
224	deep	lr.	lr.	pron.	com.	good	4–4–4	—	∩	deep p.g.p.	v. lr.	med.	med.	med.	arth.	com.	—	Guanche	—
225	deep	med.	med.	sm.	com.	good worn	4–4–3	—	∩	deep p.g.p. lr.	sm.	med.	med.	med.	arth.	—	—	near Nordic	—
226	deep	med.	med.	sm.	com.	good	4–3–2	3 m. red.	∩	deep p.g.p. lr.	sm.	med.	med.	med.	—	—	—	near Guanche	—
228	med.	med.	med.	med.	com.	good	4–4–4	—	Λ	deep, sm. p.g.p.	sm.	med.	med.	med.	—	r. com.	—	Guanche	—
229	deep	v. lr.	v. lr.	sm.	com.	med. worn	4–4–3	—	U	deep p.g.p.	sm.	med.	med.	med.	arth.	—	—	near Nordic	—
230	sm.	sm.	sm.	med.	com.	good worn	4–4–3	—	∩	deep p.g.p.	sm.	sm.	med.	med.	—	—	1 sm. r.	near Nordic	—
231	sm.	v. lr.	v. lr.	sm.	com.	good	4–4–4	—	Uh.	deep p.g.p. lr.	sm.	sm.	med.	sm.	arth.	—	—	Guanche	—
233	sm.	med.	med.	sm.	com.	lost a.m.	?	absc.	∩	deep arth.	med.	sm.	med.	med.	v. arth.	—	—	near Guanche	—
236	med.	v. lr.	v. lr.	med.	com.	worn	4–4–4	—	∩	deep, sm. p.g.p.	sm.	sm.	sm.	sm.	—	ind.	—	Guanche	—
238	med.	lr.	lr.	sm.	com.	good worn	4–4–4	—	∩ torus	deep p.g.p. lr.	lr.	med.	med.	med.	—	—	—	near Nordic	les. sag. sut.
241	deep	med.	med.	med.	com.	lost a.m.	?	—	∩	med., sm. p.g.p.	med.	med.	med.	med.	arth.	sp. proc. lr.	2 lr.	near Guanche	healed lin. fract., nas. sept. defl.
242	med.	lr.	lr.	med.	com.	good worn	?	—	∩	deep, sm. p.g.p.	med.	med.	med.	med.	arth.	—	—	near Nordic	—
243	med.	lr.	lr.	med.	com.	lost a.m.	?	—	∩	deep p.g.p. lr.	v. lr.	med.	med.	med.	arth.	ind.	—	near Nordic	—
244	sm.	med.	med.	sm.	com.	good worn	4–4–4	—	∩	deep p.g.p.	sm.	lr.	med.	med.	arth.	—	—	near Nordic	—
246	sm.	med.	med.	pron.	com.	caries poor	?	—	∩	deep arth.	lr.	sm.	med.	med.	arth.	sp. proc. lr.	—	near Nordic	—
249	med.	med.	med.	med.	com.	poor worn	?	absc.	∩	deep, sm. p.g.p.	sm.	sm.	sm.	lr.	—	—	r. com.	Guanche	—
251	sm.	lr.	lr.	v. pron.	com.	good worn	?	—	∩	deep p.g.p.	lr.	med.	med.	med.	—	ind.	—	Guanche	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
253	br. med.	br. tub. lr. p.c.d.	med.	med.	med.	begun at pt.	almost closed	begun	few sm.	—	—	1 sm. l. epipt.	H	2 sm.	sm.	lr.	deep	br. med.	med.	sharp	—	low	r. and l. com.
254	h., med. el.	br. tub. lr.	prot.	med.	med.	begun at pt.	almost closed	open	many lr.	—	—	2 sm. epipt.	H	1 med.	lr.	sm.	sm.	h. nar.	v. nar.	sharp	—	med.	r. and l. com.
255	med. med. el.	br., el. med.	med.	med.	simple	almost closed	closed	begun	—	—	—	—	H	3 sm.	v. lr.	med.	med.	v. h. nar.	br.	dull	ind.	h.	r. and l. com.
260	med. med. el.	br. p.c.d.	prot.	med.	med.	begun at pt.	begun at obel.	open	sev. sm.	—	—	—	H	2 sm.	med.	med.	deep	nar. med.	v. nar.	sharp	—	low	—
261	low, br. prot.	br. el.	med.	med.	compl.	begun at pt.	almost closed	begun	few sm.	—	—	—	H	2 sm.	sm.	med.	med.	low nar.	med.	dull	—	h.	—
333	med.	br.	med.	prot.	simple	begun at pt.	begun at obel.	open	sev. med.	—	—	—	H	1 sm.	sm.	med.	v. lr.	med.	br.	sharp	—	med.	—
334	br. med.	br., sm. p.c.d.	prot.	prot.	compl.	begun at pt.	begun	open	—	—	1 med.	—	K	1 sm.	med.	sm.	—	h., br.	med.	dull	—	med.	—
335	br. prot.	br.	prot.	prot.	compl.	begun at pt.	½ closed	open	sev. med.	—	—	—	K	—	med.	med.	med.	med.	med.	sharp	—	med.	—
339	br. prot.	br. tub. lr. p.c.d.	prot.	prot.	med.	open	open	open	many lr.	—	—	1 sm. epipt.	H	2 sm.	med.	sm.	sm.	low, br.	br.	dull	—	low	l. com.
340	br. prot.	v. br. sm. el.	med.	prot.	med.	begun at pt.	began at obel.	open	sev. med.	—	—	—	H	—	sm.	sm.	med.	med.	br.	sharp	—	low	—
341	h. br. med. el.	br.	med.	prot.	med.	begun at pt.	begun at obel.	open	sev. lr.	—	—	—	H	1 sm.	lr.	lr.	lr.	h. nar.	med.	sharp	—	low	—
343	br. med. el.	br., el. p.c.d.	med.	med.	compl.	open	½ closed	open	few sm.	—	—	—	H	—	med.	med.	sm.	med.	nar.	sharp	—	med.	r. and l. com.
344	br. med.	br. el.	comp.	prot.	compl.	begun at pt.	almost closed	begun	sev. sm.	—	—	—	H	2 sm.	v. lr.	lr.	lr.	med.	nar.	sharp	—	med.	r. and l. com.
345	br. med.	med.	comp.	prot.	med.	open	begun	open	few sm.	—	—	2 med. epipt.	H	1 sm.	lr.	lr.	lr.	h. nar.	med.	sharp	—	med.	—
348	br. med. el.	br.	med.	med.	med.	begun at pt.	begun	begun	2 med.	—	—	—	H	2 sm.	med.	sm.	sm.	h. nar.	med.	sharp	—	med.	—
352	br. med.	br. sm. el.	comp.	prot.	compl.	begun at pt.	almost closed	open	—	—	—	—	K	2 sm.	med.	med.	med.	h. nar.	med.	sharp	—	med.	—
354	br. med. el.	med.	comp.	prot.	v. compl.	almost closed	almost closed	open	many sm.	—	—	1 l. epipt.	K	1 sm.	v. lr.	v. lr.	lr.	h. nar.	med.	sharp	—	low	—
356	h., br. med. el.	br. el.	med.	prot.	simple	almost closed	almost closed	begun	—	—	?	?	?	1 sm.	med.	med.	med.	med.	v. br.	dull	sm.	med.	—

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
253	med.	med.	med.	pron.	com.	poor worn	?	absc.	∩	deep p.g.p.	med.	sm.	sm.	sm.	arth.	—	—	near Guanche	—
254	med.	sm.	sm.	med.	com.	med.	?	—	∩	deep p.g.p.	med.	med.	med.	lr.	—	—	—	near Nordic	—
255	sm.	med.	med.	sm.	com.	good worn	?	—	∩ h.	deep p.g.p. lr.	med.	sm.	sm.	med.	arth.	ind.	—	near Nordic	—
260	deep	sm.	sm.	pron.	com.	poor worn	?	absc. caries	∩	deep, sm. p.g.p.	lr.	sm.	sm.	med.	—	—	—	Guanche	—
261	?	v. lr.	v. lr.	?	com.	lost a.m.	?	absc.	?	deep p.g.p.	med.	sm.	sm.	?	arth.	—	—	near Guanche	—
333	?	lr.	lr.	?	com.	lost a.m.	?	—	?	deep p.g.p.	med.	med.	sm.	med.	—	—	—	Guanche	—
334	?	sm.	sm.	?	com.	poor worn	?	absc. caries	?	deep p.g.p.	sm.	sm.	sm.	med.	arth.	—	—	Guanche	old dep. fract. r. pari.
335	?	med.	med.	?	com.	lost a.m.	?	absc. caries	?	deep	med.	med.	sm.	sm.	arth.	—	—	Guanche	—
339	sm.	med.	med.	sm.	com.	med. worn	?	—	∩	deep p.g.p.	lr.	lr.	med.	med.	arth.	—	—	near Guanche	—
340	sm.	med.	med.	med.	com.	good worn	?	—	U	deep arth.	med.	med.	med.	med.	arth.	—	—	Guanche	—
341	?	v. lr.	v. lr.	?	com.	all lost a.m.	?	absc.	?	deep p.g.p.	v. lr.	med.	med.	med.	arth.	sp. proc. lr.	—	Guanche	—
343	med.	lr.	lr.	—	com.	good worn	4–4–2	—	∩	deep, sm. p.g.p.	med.	med.	sm.	med.	arth.	—	—	Guanche	—
344	?	v. lr.	v. lr.	?	com.	lost a.m.	?	—	?	deep p.g.p. lr.	sm.	sm.	med.	med.	—	ind.	—	Guanche	—
345	med.	v. lr.	v. lr.	?	com.	lost a.m.	?	—	?	deep, sm. p.g.p.	lr.	lr.	lr.	lr.	—	l. com.	—	?	—
348	sm.	med.	med.	sm.	com.	med. worn	?	—	∩	med. p.g.p.	med.	med.	med.	lr.	—	—	—	Guanche	—
352	?	med.	med.	?	com.	all lost a.m.	?	—	?	deep	med.	med.	med.	med.	—	—	—	Guanche	—
354	sm.	med.	med.	?	com.	good worn	?	—	∩	deep p.g.p. lr.	lr.	sm.	—	sm.	arth.	—	—	Guanche	—
356	?	v. lr.	v. lr.	?	com.	poor	?	many absc.	∩	deep, sm. p.g.p.	lr.	lr.	lr.	lr.	arth.	—	—	Guanche	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
358	med.	br. p.c.d.	comp.	med.	med.	almost closed	almost closed	almost closed	?	?	?	?	?	—	v. lr.	v. lr.	lr.	med.	br.	sharp	med.	low	l. com.
359	h., br. med. el.	br. el.	med.	prot.	simple	begun at pt.	½ closed	open	1 sm.	—	—	—	?	—	lr.	med.	deep	h. nar.	nar.	sharp	—	low	—
360	br. prot.	br. sm. el.	prot.	prot.	compl.	open	open	open	1 lr.	—	—	—	K	—	med.	med.	deep	low	br.	dull	—	v. low	l. com.
362	med.	v. br. p.c.d.	med.	prot.	med.	almost closed	almost closed	open	sev. lr.	—	—	—	H	2 sm.	lr.	med.	med.	v. br. br. med.	br.	sharp	—	h.	r. and l. com.
364	nar. ret.	med. el.	comp.[3]	prot.	simple	begun at pt.	almost closed	begun	—	—	—	—	H	2 sm.	lr.	med.	med.	?	med.	sharp	—	h.	r. com.
369	prot. med. el.	br. p.c.d.	comp.	med.	med.	open	open	open	1 sm.[1]	—	—	1 lr. epipt.	H	2 sm.	lr.	sm.	med.	h. nar.	nar.	sharp	—	low	l. com.
370	h. br.	med.	med.	prot.	compl.	almost closed	almost closed	½ closed	sev. lr.	—	—	1 sm. l. epipt.	H	—	lr.	sm.	sm.	h. nar.	nar.	sharp	—	h.	r. and l. com.
375	h., nar. med. el.	nar. p.c.d.	comp.	med.	med.	almost closed	almost closed	begun	—	—	—	—	H	1 sm.	lr.	v. lr.	deep	h. nar.	br.	sharp	—	med.	—
376	br., prot. met. sut.	med.	med.	v. prot.	med.	open	open	open	many lr.	2 med.	—	—	H	1 sm.	sm.	sm.	sm.	med.	br.	sharp	—	h.	r. com.
378	prot. med. el.	br. tub. lr.	prot.	prot.	med.	open	begun at obel.	open	1 med.	—	—	—	K	1 sm.	sm.	med.	deep	br. med.	med.	dull	—	v. low	—
379	br. med. el.	br. el.	med.	med.	compl.	open	open	open	—	—	—	—	H	1 med.	med.	sm.	sm.	med.	med.	sharp	—	med.	r. and l. com.
381	br. med.	v. br. p.c.d.	prot.	med.	compl.	open	open	open	1 lr. 2 med.	1 lr.	—	—	H	2 sm.	med.	med.	med.	br. med.	med.	indist.	pron.	med.	—
382	med. prot.	med.	med.	prot.	compl.	open	begun at obel.	begun	sev. sm.	—	—	3 sm. epipt.	H	2 sm.	med.	med.	sm.	med.	nar.	sharp	—	low	r. and l. com.
383	nar. ret.	med.	med.	med.	med.	open	begun at obel.	open	—	—	—	—	H	—	med.	med.	sm.	low	br.	indist.	—	v. low	l. com.
385	br. med. el.	br.,sm. p.c.d.	med.	prot.	compl.	open	open	open	many med.	many sm.	—	1 epipt.	H	—	sm.	sm.	sm.	low nar.	med.	dull	—	v. low	l. com.
386	nar., ret. med. el.	med. el.	prot.	med.	med.	almost closed	closed	closed	—	—	—	—	K	1 med.	med.	med.	med.	br. h. nar.	med.	sharp	—	low	—
387	med.	med.	med.	prot.	med.	open	begun at obel.	begun	sev. lr.	—	—	—	K	—	med.	med.	med.	med.	med.	sharp	—	low	r. com.
390	br. med. el.	br., el. p.c.d.	med.	med.	compl.	begun at pt.	almost closed	almost closed	sev. med.	—	—	—	H	2 sm.	med.	med.	med.	med.	med.	sharp	—	low	—
392	med.	br.	comp.	med.	compl.	closed	closed	almost closed	?	?	?	?	K	1 sm.	sm.	med.	med.	med.	med.	sharp	—	med.	—

[3] Temporo-parietal suture closed.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
358	med.	v. lr.	v. lr.	med.	com.	med. worn	4–4–3	—	U	deep arth. lr.	lr.	sm.	med.	med.	arth.	2 com.	—	Guanche	—
359	?	lr.	lr.	?	com.	lost a.m. worn	?	—	Ω	deep arth.	med.	sm.	med.	med.	—	—	—	Guanche	—
360	?	lr.	lr.	pron.	com.	lost a.m. worn	?	—	?	deep p.g.p. lr.	sm.	med.	lr.	med.	—	—	—	Guanche	—
362	?	v. lr.	v. lr.	?	com.	all lost a.m.	?	—	?	deep p.g.p.lr.	lr.	sm.	med.	med.	arth.	—	—	near Nordic	—
364	?	lr.	lr.	?	com.	v. worn	?	—	Ω	deep arth.	med.	med.	med.	lr.	arth.	—	—	near Nordic	—
369	sm.	v. lr.	v. lr.	med.	?	good	?	absc. 3 m.	Ω	deep, sm. p.g.p.	med.	med.	sm.	med.	—	—	—	Guanche	—
370	?	med.	med.	med.	com.	poor worn	?	—	?	deep, sm. p.g.p.	sm.	sm.	sm.	med.	—	—	—	near Nordic	—
375	?	v. lr.	v. lr.	?	com.	all lost a.m.	?	many absc.	?	shallow	lr.	med.	—	lr.	—	ind.	—	Nordic-Guanche	—
376	deep	med.	med.	—	com.	med.	4–4–4	—	Ω	med.	lr.	lr.	—	med.	—	—	—	near Guanche	—
378	?	med.	med.	?	?	most lost a.m.	?	—	?	deep p.g.p.	med.	lr.	med.	med.	arth.	—	1 sm. r.	Guanche small	—
379	med.	med.	med.	med.	3 m. imp. erup.	?	4–4–4	—	U	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	near Nordic	—
381	med.	lr.	lr.	sm.	com.	lost a.m.	?	—	U	deep p.g.p. lr.	lr.	med.	med.	med.	—	ind.	—	Guanche	—
382	med.	v. lr.	v. lr.	med.	com.	good worn	?	—	Ω	med.	med.	lr.	med.	med.	—	—	—	Guanche	old les. over lamb.
383	med.	sm.	sm.	pron.	com.	good worn	4–4–3	—	Ω	med., sm. p.g.p.	med.	sm.	med.	med.	arth.	—	1 sm.	near Guanche	—
385	—	lr.	lr.	sm.	com.	good worn	4–4–3	—	Ω	deep	med.	sm.	med.	med.	—	—	—	Guanche	—
386	?	med.	med.	pron.	com.	worn	?	—	U	deep p.g.p.	med.	sm.	med.	med.	—	—	2 med.	near Nordic	—
387	med.	med.	med.	med.	com.	good worn	4–3–3	—	Ω	deep p.g.p.	med.	med.	med.	med.	—	—	—	near Guanche	—
390	?	lr.	lr.	?	com.	lost a.m.	?	—	?	deep arth.	med.	med.	med.	med.	arth.	l. ind.	—	Guanche	—
392	?	lr.	lr.	med.	com.	poor worn	?	absc. caries	U	deep arth.	sm.	sm.	sm.	med.	—	sp. proc. lr.	—	near Nordic	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
396	br. med.	br. p.c.d.	med.	prot.	med.	begun at pt.	almost closed	begun	sev. med.	—	—	—	H	—	lr.	med.	med.	med.	br.	sharp	—	med.	—
397	br. med. el.	br. el.	med.	?	med.	open	open	open	?	—	—	—	H	2 sm.	med.	med.	med.	br.	br.	dull	—	low	r. and l. com.
398	med.	med.	med.	med.	med.	begun at pt.	½ closed	begun	sev. med.	2 med.	—	—	H	—	lr.	med.	med.	med.	br.	dull	—	med.	—
400	med.	br. tub. lr. p.c.d.	med.	prot.	compl.	open	open	open	1 v. lr. sev. med.	—	—	1 sm. l. epipt.	H	2 sm.	sm.	med.	med.	med.	med.	sharp	—	low	r. and l. com.
401	med.	med.	med.	med.	compl.	begun	closed	almost closed	1 v. lr. sev.sm.	—	—	—	K	—	lr.	sm.	sm.	med.	med.	sharp	—	h.	—
402	nar. met. sut.	med.	comp.	prot.	med.	begun at pt.	almost closed	open	few sm.	—	—	—	H	1 sm.	med.	med.	sm.	?	br.	dull	—	low	r. com.
403	low, br.	br. el.	comp.	prot.	med.	begun at pt.	closed	begun	—	crests lr.	1 med.	—	H	2 sm.	med.	lr.	lr.	br. med.[4]	med.	sharp	—	med.	—
405	med.	med.	prot.	med.	compl.	begun at pt.	almost closed	begun	few sm.	—	—	2 med. epipt.	K	2 sm.	sm.	med.	sm.	?	br.	dull	—	med.	—
406	med. med. el.	br.	med.	med.	med.	open	open	open	few sm.	1 med.	—	—	H	—	med.	med.	med.	med.	br.	sharp	—	low	r. and l. com.
407	h., br.	med. el.	comp.	prot.	med.	begun at pt.	almost closed	begun	sev. lr.	—	—	—	H	—	lr.	med.	v. lr.	br. med.	v. br.	sharp	—	low	r. com.
408	h., br.	br.	med.	med.	compl.	begun at pt.	begun at obel.	open	sev. sm.	—	—	—	H	—	med.	sm.	sm.	med.	med.	sharp	—	med.	—
409	h., br.	br., el. med. tub. lr.	med.	med.	med.	open	open	open	1 med.	—	—	1 sm. l. epipt.	H	2 sm.	sm.	med.	med.	med.	med.	sharp	—	h.	l. com.
412	h., v. br.	br. p.c.d.	prot.	prot.	med.	begun at pt.	begun at obel.	begun	—	—	—	—	r. H l. X	—	med.	sm.	—	med.	med.	dull	—	h.	r. and l. com.
414	low, br. met. sut.	br. p.c.d.	prot.	prot.	compl.	open	open	open	many lr.	—	—	—	H	—	lr.	med.	med.	med.	med.	dull	—	med.	—
418	h., br.	nar. p.c.d.	comp.	prot.	med.	begun at pt.	begun at obel.	open	many lr.	—	—	—	H	1 med.	lr.	lr.	deep	br. med.	br.	dull	sm.	low	—
419	med.	med. p.c.d.	med.	med.	med.	almost closed	almost closed	almost closed	—	—	—	—	H	—	v. lr.	sm.	—	med.	br.	sharp	—	low	—
420	h., br. prot.	br. p.c.d.	prot.	st. in. lr.	med.	open	begun at obel.	open	2 med.	—	—	—	H	2 sm.	lr.	lr.	sm.	br. med.	br.	sharp	—	low	—
421	h., br.	br. p.c.d.	med.	prot.	med.	open	open	open	1 lr. sev.sm.	—	—	—	H	—	lr.	sm.	sm.	h. nar.	nar.	sharp	—	low	r. and l. com.

[4] Nasal suture obliterated.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
396	med.	med.	med.	?	com.	lost a.m. worn	?	—	?	deep arth.	lr.	med.	med.	med.	arth.	—	—	Guanche	—
397	med.	med.	med.	med.	com.	good	4–4–4	—	∩	med. p.g.p. lr.	med.	—	—	?	—	—	—	near Guanche	—
398	med.	med.	med.	med.	com.	good	4–4–4	—	∩ h.	deep p.g.p. lr.	med.	sm.	sm.	med.	—	—	—	near Guanche	—
400	med.	med.	med.	med.	com.	lost a.m.	?	absc.	?	shallow p.g.p. lr.	sm.	med.	med.	sm.	arth.	—	—	Guanche small	—
401	?	med.	med.	?	com.	lost a.m.	?	—	?	deep p.g.p. lr.	med.	med.	med.	med.	arth.	—	—	Medit.	—
402	med.	sm.	sm.	pron.	com.	good.	4–4–3	—	∩	deep p.g.p. lr.	sm.	sm.	med.	med.	—	ind.	—	near Guanche	—
403	?	med.	med.	?	com.	med. worn	4–3–3	—	∩	deep p.g.p. lr.	med.	med.	sm.	lr.	arth.	—	—	Guanche	—
405	med.	med.	med.	med.	com.	lost a.m.	?	absc.	?	deep p.g.p.	med.	med.	sm.	med.	arth.	—	2 sm.	near Guanche	—
406	med.	med.	med.	med.	com.	good	4–4–3	—	∩	deep p.g.p. lr.	med.	med.	med.	med.	arth.	—	2 lr.	near Guanche	—
407	v. deep	v. lr.	v. lr.	med.	com.	lost a.m.	?	—	∩	deep p.g.p. lr.	med.	med.	med.	med.	—	r. com.	—	Guanche	—
408	med.	sm.	sm.	pron.	com.	good	4–4–4	—	∩	deep p.g.p. lr.	v. lr.	sm.	sm.	sm.	—	—	—	near Guanche	—
409	deep	lr.	lr.	—	com.	med. sl. worn	4–3–3	—	U h.	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	near Guanche	—
412	?	v. lr.	v. lr.	?	com.	lost a.m.	?	—	?	deep p.g.p. lr.	sm.	med.	med.	med.	arth.	—	—	near Nordic	—
414	?	med.	med.	?	com.	lost a.m.	?	—	?	med. p.g.p. lr.	sm.	med.	sm.	med.	—	—	—	Guanche	—
418	med.	med.	med.	med.	com.	lost	?	absc.	?	deep p.g.p. lr.	?	med.	med.	med.	arth.	ind.	1 sm. l.	Guanche	r. temp. brok.
419	?	med.	med.	?	com.	lost	?	—	?	deep, sm. p.g.p.	med.	med.	sm.	med.	arth.	—	2 sm.	near Guanche	—
420	med.	v. lr.	v. lr.	sm.	com.	good	4–4–4	—	∩	deep p.g.p. lr.	lr.	med.	med.	med.	—	ind.	—	Nordic-Guanche	—
421	med.	v. lr.	v. lr.	sm.	2 p.m., 3 m. incom.	med.	4–4–4	—	∩ h.	deep p.g.p.	?	sm.	sm.	med.	—	—	—	near Medit.	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
422	nar. med. el.	nar.	comp.	prot.	v. compl.	open	open	open	—	—	—	—	H	—	lr.	lr.	deep	h. nar.	med.	sharp	—	low	r. and l. com.
423	h., nar.	nar.	comp.	med.	compl.	begun at pt.	begun at obel.	begun	—	—	—	—	H	1 sm.	lr.	sm.	sm.	h. med.	med.	sharp	—	med.	r. and l. com.
424	h., br.	med. el.	med.	med.	compl.	open	open	open	—	—	—	2 lr. epipt.	H	1 sm.	lr.	med.	deep	med.	med.	sharp	—	low	r. and l. com.
427	prot. met. sut.	br. tub. lr.	med.	prot.	compl.	open	open	open	—	—	—	—	H	2 sm.	lr.	—	—	br., fl.	v. br.	dull	sm.	low	—
428	br., ret.	med. el.	med.	med.	compl.	almost closed	almost closed	begun	sev. lr.	—	—	—	H	1 med.	lr.	med.	sm.	med.	br.	dull	—	med.	—
429	low, br.	br. el.	med.	prot.	med.	almost closed	almost closed	begun	—	—	—	—	H	—	med.	med.	sm.	br. med.	med.	dull	—	h.	r. and l. com.
430	h., br.	med.	med.	prot.	compl.	begun at pt.	begun at obel.	open	1 sm.	—	—	—	H	2 sm.	med.	lr.	deep	med.	med.	dull	sm.	low	r. and l. com.
431	h., med.	med. el.	med.	med.	compl.	begun at pt.	almost closed	begun	—	—	—	—	H	—	med.	lr.	med.	h. nar.	med.	dull	—	low	—
433	br. med.	br. el.	prot.	med.	compl.	open	open	open	sev. sm.	—	—	—	H	—	lr.	med.	med.	low nar.	br.	sharp	—	low	r. and l. com.
435	br. med. el.	med.	prot.	med.	med.	almost closed	almost closed	open	—	—	—	—	K	2 med.	med.	med.	sm.	h. br.	med.	sharp	—	med.	—
436	h., br. prot.	br. el.	prot.	prot.	compl.	open	begun at obel.	open	—	—	—	2 sm. epipt.	H	—	med.	med.	deep	br. med.	med.	sharp	—	low	r. and l. com.
440	br. med.	br.	prot.	med.	compl.	almost closed	almost closed	almost closed	?	—	—	—	H	—	med.	—	—	br. med.	med.	sharp	—	low	r. and l. com.
441	h., med. prot. met. sut.	br. el.	med.	prot.	compl.	open	open	open	sev. lr.	—	—	—	H	—	lr.	sm.	sm.	med.	nar.	dull	—	low	r. and l. com.
442	nar. ret.	br. tub. lr.	med.	med.	med.	open	open	open	2 sm.[1]	—	—	—	H	—	med.	med.	—	med.	med.	med.	—	low	—
444	h., med. med. el.	br. tub. lr.	comp.	med.	med.	open	open	open	—	—	—	—	H	1 sm.	lr.	lr.	deep	nar. med.	br.	dull	—	low	—
446	br. med.	br.	med.	med.	compl.	open	open	open	—	—	—	1 sm. r. epipt.	H	1 sm.	med.	sm.	sm.	med.	nar.	sharp	—	low	—
447	med. med. el. met. sut.	br.	med.	med.	med.	begun at pt.	almost closed	begun	few sm.	—	—	—	H	—	lr.	med.	med.	h. nar.	med.	irreg.	—	low	—
448	br. med.	br.,sm. p.c.d.	med.	prot.	med.	begun at pt.	½ closed	open	sev. med.	—	—	1 sm. l. epipt.	H	1 sm.	med.	sm.	sm.	med.	nar.	sharp	—	med.	—

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
422	deep	v. lr.	v. lr.	med.	com.	good worn	4–4–3	—	Ω	deep arth.	sm.	med.	med.	med.	—	—	sev. r. and l.	near Guanche	—
423	?	med.	med.	?	com.	worn	?	absc.	Ω	deep p.g.p.	med.	med.	med.	med.	—	—	—	Medit-Guanche	old. les. r. front, healed fract. l. pari.
424	med.	med.	med.	sm.	3 m. abs.	?	?	—	Ω	deep p.g.p.	med.	med.	med.	med.	—	—	—	near Guanche	—
427	med.	med.	med.	pron.	com.	lost a.m. worn	?	absc.	U	deep, sm. p.g.p.	med.	sm.	—	med.	—	r. ind.	—	near Negroid	—
428	sm.	lr.	lr.	med.	com.	lost a.m.	?	—	?	deep, sm. p.g.p.	sm.	med.	med.	med.	—	ind.	—	near Nordic	—
429	?	sm.	sm.	?	com.	lost a.m.	?	—	?	med. p.g.p.	med.	sm.	med.	lr.	arth.	—	—	near Nordic	—
430	med.	v. lr	v. lr.	med.	com.	med.	4–4–4	—	Ω	deep, v.lr. p.g.p.	lr.	lr.	med.	med.	arth.	—	—	Guanche	old les. front.
431	lr.	v. lr.	v. lr.	med.	com.	poor worn	?	absc. caries	U	deep, sm. p.g.p.	sm.	med.	med.	med.	—	ind.	—	near Nordic	—
433	med.	lr.	lr.	pron.	com.	good	4–4–3	—	Ω	deep p.g.p. lr.	lr.	med.	sm.	med.	—	—	—	Guanche	—
435	med.	v. lr.	v. lr.	med.	com.	lost a.m. worn	?	—	Ω	deep arth.	lr.	sm.	sm.	med.	arth.	—	—	near Guanche	—
436	med.	sm.	sm.	sm.	com.	good worn	4–4–3	—	Ω	deep p.g.p. lr.	med.	lr.	med.	med.	—	—	2 sm.	Guanche	—
440	med.	med.	med.	med.	com.	worn	?	—	Ω	deep arth.	sm.	sm.	—	med.	—	—	—	Medit.	—
441	?	v. lr.	v. lr.	lr.	com.	lost a.m.	?	—	?	deep p.g.p.	lr.	med.	med.	lr.	—	—	—	Guanche	—
442	med.	med.	med.	med.	com.	good	4–4–4	—	Ω	med. p.g.p.	lr.	lr.	med.	lr.	arth.	—	—	near Nordic	—
444	?	lr.	lr.	v. pron.	com.	lost a.m.	?	—	U	deep p.g.p. lr.	med.	med.	med.	med.	—	ind.	—	Guanche-Australoid	—
446	med.	med.	med.	sm.	3 m. uner.	?	4–4–	—	Ω	deep p.g.p. lr.	med.	sm.	sm.	med.	arth.	ind.	—	near Nordic	—
447	med.	sm.	sm.	med.	com.	sev. lost worn	?	many absc.	Ω	deep arth. sm.	sm.	med.	lr.	lr.	—	ind.	—	Nordic-Guanche	—
448	med.	med.	med.	sm.	com.	med. worn	?	absc.	Ω	shallow arth.	sm.	sm.	sm.	sm.	—	—	—	?	old les. over l. orb.

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
450	ret. met. sut.	med.	comp.	prot.	compl.	almost closed	almost closed	begun	many med.	sev. sm.	—	?	?	—	lr.	lr.	lr.	med.	med.	sharp	—	low	—
482	med.	med.	med.	?	med.	closed	closed	open	?	—	—	1 r. epipt.	H	?	med.	med.	med.	med.	med.	dull	—	low	r. and l. com.
758	low, br.	med. p.c.d.	prot.	med.	med.	almost closed	almost closed	begun	few sm.	—	—	—	K	2 sm.	lr.	med.	sm.	med.	br.	med.	—	h.	—
759	h., med.	med.	med.	prot.	med.	open	open	open	many lr.	—	—	—	H	—	sm.	med.	deep	med.	med.	sharp	—	low	—
760	med.	med.	med.	med.	simple	begun at pt.	open	open	—	—	—	—	K	1 sm.	med.	sm.	—	med.	med.	sharp	—	h.	l. com.
761	med.	med.	med.	med.	?	closed	closed	closed	?	—	—	—	—	—	med.	—	—	nar.	med.	sharp	—	h.	—
762	low met. sut.	med. p.c.d.	med.	med.	med.	almost closed	closed	begun	—	—	—	—	H	1 med.	lr.	med.	?	med. ?	med.	sharp	—	h.	—
764	low, med.	br.	med.	med.	med.	open	begun	open	few sm.	1 lr.	—	1 med. interp.	H	—	lr.	med.	med.	h.	nar.	sharp	—	h.	—
765	br. met. sut.	br.	med.	med.	compl.	begun at pt.	begun at obel.	open	few sm.	—	—	1 epipt.	H	—	sm.	med.	med.	nar. h.	med.	dull	ind.	med.	r. and l. com.
766	h., nar.	med. tub. lr.	comp.	med.	simple	open	open	open	1 lr.	—	—	1 sm. epipt.	H	2 sm.	med.	med.	med.	nar. h.	med.	indist.	—	h.	—
767	br. med.	br.	comp.	med.	simple	begun at pt.	almost closed	open	1 lr.	—	—	—	K	—	lr.	lr.	med.	nar. h.	med.	sharp	ind.	h.	—
775	br. ret.	br. el.	med.	med. torus	simple	almost closed	closed	begun	—	—	—	—	K	1 sm.	lr.	med.	sm.	nar. h.	nar.	sharp	—	v. h.	—
772	br., ret.	br.	med.	med.	simple	almost closed	almost closed	begun	sev. med.	—	—	—	K	1 med.	med.	lr.	med.	nar. h.	nar.	sharp	—	h.	—
803	med. med. el.	med.	med.	med.	compl.	begun at pt.	begun at obel.	open	—	—	—	—	H	—	med.	med.	med.	nar. med.	nar.	sharp	—	low	—
800	med.	med.	med.	med. torus	med.	almost closed	almost closed	begun	—	—	—	—	K	—	med.	med.	med.	h.	med.	dull	—	med.	—
769	h., nar. med. el.	med.	med.	med.	med.	begun at pt.	begun at obel.	begun	Inca	—	—	—	H	—	med.	med.	med.	nar. h.	med.	sharp	—	low	—
770	h., br.	br., el. med.	med.	med.	med.	begun at pt.	begun at obel.	begun	—	—	—	—	H	—	med.	med.	med.	nar. br. med.	br.	sharp	—	med.	—

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
450	med.	lr.	lr.	?	com.	many lost a.m.	?	—	?	deep arth.	sm.	med.	med.	med.	arth.	—	1 l.	Guanche?	—
482	med.	lr.	lr.	med.	com.	lost a.m.	?	—	∩	med., sm. p.g.p.	med.	med.	med.	lr.	—	—	—	Guanche	—
758	sm.	sm.	sm.	sm.	com.	good	4–4–2	—	∩	med. p.g.p.	med.	med.	med.	med.	—	—	—	near Nordic	—
759	v. deep	sm.	sm.	sm.	com.	?	?	—	∩	deep p.g.p.	med.	lr.	med.	med.	—	—	—	Guanche-Nordic	—
760	sm.	sm.	sm.	pron.	com.	lost p. m.	?	—	Λ	deep arth.	sm.	sm.	sm.	med.	—	—	—	Medit.	—
761	med.	med.	med.	sm.	com.	worn	4–4–4	—	Λ	deep p.g.p.	sm.	sm.	—	sm.	—	—	—	Medit.	old dep. les. pari.; dep. les. breg.
762	med.	med.	med.	?	com.	lost	?	—	∩	deep p.g.p.	med.	lr.	med.	med.	arth.	1 com.	—	Nordic	—
764	sm.	sm.	sm.	sm.	com.	?	4–4–3	—	Λ	deep p.g.p.	sm.	med.	med.	med.	—	ind.	—	Nordic	—
765	sm.	med.	med.	—	com.	good worn	?	—	∩	deep, sm. p.g.p.	lr.	med.	lr.	med.	—	ind.	—	near Nordic	—
766	med.	v. lr.	v. lr.	—	com.	?	4–4–4	l. c. uner.	Λ	deep	med.	med.	med.	med.	—	—	1 sm. l.	Nordic	old dep. les. l. pari.
767	med.	v. lr.	v. lr.	sm.	com.	worn	?	—	Λ	deep arth.	lr.	med.	med.	med.	arth.	—	—	near Nordic	—
775	sm.	med.	med.	—	com.	med. worn	?	c. uner.	∩	deep, sm. p.g.p.	med.	med.	lr.	med.	arth.	—	—	Nordic	—
772	sm.	lr.	lr.	sm.	com.	worn	?	absc. r. 3 m.	∩	deep arth. sm.	lr.	?	?	?	—	1 com.	—	Nordic	—
803	med.	med.	med.	sm.	com.	?	?	absc. caries	?	deep	med.	sm.	sm.	med.	—	—	—	Nordic-Guanche	—
800	?	med.	med.	?	com.	many lost a.m.	?	absc.	∩	deep, sm. p.g.p.	sm.	med.	med.	med.	arth.	ind.	—	Nordic-Guanche	—
769	med.	lr.	lr.	sm.	com.	poor worn	?	—	∩	deep p.g.p.	med.	med.	med.	med.	—	—	—	Nordic-Guanche	—
770	sm.	lr.	lr.	med.	com.	good	?	3 m. abs.	?	deep, sm. p.g.p.	med.	med.	med.	med.	—	ind.	—	near Nordic	—

TABLE XII. — CRANIAL OBSERVATIONS. TENERIFE. FEMALE

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
8	h.	med.	prot.	st.	med.	almost closed	almost closed	almost closed	sev. lr.	—	—	—	H	1 l. n.	sm.	sm.	sm.	low br.	br.	sharp	—	med.	—
9	h., prot.	h.	prot.	med.	compl.	closed	closed	½ closed	few sm.	—	—	—	H.	1 l. n.	sm.	—	—	h., br.	br.	dull	—	med.	1 l.
14	l., prot.	br. tub. lr.	med.	med.	v. compl.	closed	begun	open	sev. med.	1 med. r.	—	1 lr. l. epipt.	K	—	med.	med.	—	low br.	nar.	dull	—	low	—
15	h., prot.	med.	med.	med.	compl.	almost closed	almost closed	almost closed	—	—	—	—	K	—	lr.	med.	—	low br.	br.	dull	—	med.	—
23	l., ret.	el.	comp.	prot.	compl.	open	open	open	sev. lr.	2 lr. r. 2 sm.	—	2 med. interp.	H	—	lr.	lr.	med.	h. med.	med.	dull	—	low	—
24	med.	med.	comp.	med.	compl.	½ closed	½ closed	½ closed	ind.	—	—	1 sm. epipt.	H	1 lr. l. 1 sm. r.	v. sm.	—	med.	h. nar.	br.	sharp	—	med.	—
25	med.	br.	med.	prot.	med.	closed	closed	open	1 lr. l. 1 lr. r.	—	—	—	H	—	sm.	—	—	h., br.	br.	dull	—	low	—
28	br. prot.	v. br.	med.	med.	v. compl.	¾ closed	¾ closed	begun	sev. lr. sm.	—	—	—	H	—	med.	lr.	med.	h. br.	med.	sharp	—	med.	—
37	ret.	med.	prot.	med.	med.	almost closed	½ closed	begun	sev. med.	—	—	—	H	—	med.	—	—	low br.	br.	dull	—	h. br.	r. and l. com.
43	prot.	med.	med.	med.	compl.	almost closed	almost closed	begun	1 med.	1 sm. r.	—	—	H	2 sm.	med.	—	—	med.	br.	sharp	—	h.	—
46	med.	med.	med.	med.	compl.	begun at pt.	open	open	—	—	—	—	H	1 med. r.	med.	—	—	med.	br.	dull	sm.	h., v. br.	—
48	l.	br., fl.	med.	med.	compl.	almost closed	almost closed	½ closed	—	—	—	—	H	—	med.	med.	—	med.	med.	sharp	—	h.	—
50	v. nar. prot.	br. v. dep.	comp.	prot.	compl.	almost closed	almost closed	¾ closed	sev. sm.	—	2 lr.	—	H	2 sm.	sm.	—	—	h. nar.	nar.	dull	—	h.	—
52	med.	med.	med.	prot.	compl.	almost closed	almost closed	½ closed	—	—	—	—	H nar.	—	lr.	med.	—	med. br.	br.	dull	—	low	—
55	l., prot. met. sut.	dep.	prot.	prot.	compl.	begun	begun	open	sev. lr.	—	—	—	H nar.	—	med.	—	—	med. br.	br.	sharp	—	h.	r. and l. com.
59	h., prot. met. sut.	br. tub. lr.	comp.	med.	compl.	open	open	open	—	—	—	—	H	1 sm.	med.	—	—	med.	med.	sharp	—	h.	r. and l. com.
65	med. el.	br. dep.	prot.	prot.	compl.	open	open	open	—	—	—	—	H	1 sm.	lr.	—	sm.	h., br.	br.	dull	—	h.	r. and. l. com.
73	med.	br.	med.	prot.	compl.	open	open	open	sev. med.	—	—	—	H	—	med.	med.	deep	low br.	br.	dull	—	med.	r. and l. com.

TABLE XII. — CRANIAL OBSERVATIONS. TENERIFE. FEMALE

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posteria Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
8	med.	sm.	sm.	—	com.	all lost	?	many absc.	—	med. p.g.p.	sm.	med.	med.	med.	worn	—	1 sm. r.	Medit. small	—
9	sm.	sm.	sm.	med.	com.	good	4–4–4	—	U	med. p.g.p.	sm.	med.	sm.	med.	worn	—	—	Medit. low	—
14	sm.	sm.	sm.	med.	com.	med.	4–4–3	—	∩ torus	deep p.g.p. lr.	sm.	med.	med.	med.	worn	—	1 med. l.	Medit. small	exos. l. pari.
15	med.	lr.	med.	med.	com.	med.	?	4 absc.	∩	deep	sm.	med.	sm.	med.	worn	—	1 med. r. and l.	Medit.	arth. gl. fossae
23	sm.	sm.	sm.	—	com.	med.	?	lr. abs. l. inc.	∩	med. p.g.p. lr.	sm.	sm.	sm.	sm.	—	—	—	Medit.	—
24	med.	sm.	?	?	?	all lost a.m.	?	—	—	med. p.g.p. lr.	lr.	lr.	med.	med.	—	—	—	Medit.	—
25	?	sm.	sm.	?	?	all lost a.m.	?	—	?	med. p.g.p.lr.	sm.	med.	sm.	med.	worn	—	—	Medit.	—
28	med.	med.	med.	sm.	com.	most lost a.m.	?	—	∩	deep p.g.p.	v. lr.	—	—	?	—	—	—	Medit.	sm. les. front.
37	sm.	med.	med.	med.	com.	sev. lost v. worn	?	absc.	∩	deep p.g.p.	med.	sm.	sm.	sm.	v. worn	—	2 lr. r.	?	healed fract. l. pari.; healed trepan. r. lambd. 6 mm. diam.
43	—	sm.	sm.	med.	com.	most lost p.m.	?	2 absc.	∩	shallow arth.	med.	med.	sm.	lr.	v. worn	—	—	?	—
46	deep	med.	med.	pron.	com.	good v. worn	?	—	∩	med. p.g.p.	sm.	med.	sm.	med.	worn	—	—	Medit.	—
48	med.	med.	med.	pron.	com.	sev. lost worn	?	sev. absc.	∩	deep p.g.p. lr.	sm.	med.	med.	med.	worn	—	—	Medit.	—
50	?	sm.	sm.	?	com.	lost a.m.	?	—	?	shallow arth.	med.	med.	sm.	?	—	—	—	Medit.	sm. les. l. pari.
52	med.	med.	med.	pron.	com.	v. worn	?	—	∩ h.	deep p.g.p. lr.	med.	sm.	sm.	sm.	worn	—	—	Medit.	—
55	deep	sm.	sm.	pron.	com.	good	4–4–4	—	∩	deep	med.	sm.	sm.	sm.	v. worn	—	—	Medit.	—
59	deep	sm.	sm.	pron.	com.	good	4–4–	—	∩	deep p.g.p. lr.	med.	med.	sm.	med.	worn	—	—	Medit.	old les. l. pari.
65	deep	med.	med.	pron.	com.	sev. lost a.m.	?	—	∩	deep p.g.p.lr.	v. lr.	sm.	sm.	dr.	worn	—	—	Guanche	—
73	deep	med.	med.	pron.	3 m. abs.	good	?	1 absc	∩	arth.	sm.	med.	med.	med.	—	—	—	Guanche	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
77	med.	med.	med.	med.	compl.	open	open	open	few sm.	—	—	—	K	1 sm.	sm.	sm.	med.	med.	br.	dull	sm.	h.	—
79	l., br.	br. tub. lr.	prot.	prot.	med.	closed	closed	⅓ closed	few sm.	—	—	—	H	1 sm.	med.	med.	sm.	med.	br.	sharp	—	h.	—
81	br., med.	br. med.	med.	prot.	med.	open	open	open	sev. lr.	—	—	—	H	?	lr.	med.	—	med. br.	med.	sharp	sm.	low	—
82	l., br.	br.	prot.	prot.	compl.	almost closed	almost closed	open	few sm.	—	—	—	H	1 sm.	sm.	—	—	med. br.	br.	dull	—	h.	—
84	l., br.	br.	prot.	med.	med.	closed	closed	begun	1 lr.	—	—	—	H	2 sm.	lr.	med.	—	low br.	br.	dull	—	low	—
89	prot.	br.	med.	prot.	compl.	⅔ closed	⅔ closed	open	sev. lr. sm.	sev. sm.	—	—	K	2 sm.	med.	—	—	h. nar.	med.	dull	—	v. h.	—
93	nar. med. el.	br.	comp.	med.	compl.	closed	½ closed	open	—	—	—	—	H	—	lr.	sm.	sm.	h. nar.	med.	sharp	—	h.	—
97	med.	med.	med.	med.	compl.	almost closed	almost closed	open	sev. med.	—	—	—	K	2 sm.	lr.	lr.	—	low br.	br.	sharp	—	med.	r. and l. com.
104	med. prot.	fl.,dep. p.c.d.	comp.	med.	compl.	begun at pt.	½ closed	closed	—	—	—	—	ret.	—	med.	—	—	low br.	br.	med.	—	med.	—
106	med.	med. p.c.d.	med.	med.	compl.	⅔ closed	begun	open	sev. lr. sm.	—	—	2 sm. epipt.	H	1 sm.	med.	med.	—	med. br.	med.	sharp	—	h.	—
129	l., br. prot.	br.	comp.	prot.	simple	closed	closed	begun	—	few sm.	—	—	H	2 sm.	sm.	—	—	med. br.	nar.	sharp	—	h.	—
132	h., br. met. sut.	med.	med.	med. in. lr.	compl.	open	open	open	sev. sm.	—	—	1 sm. epipt.	H	—	med.	med.	deep	h. nar.	nar.	sharp	—	med.	r. and l. com.
154	l., prot.	br.	med.	med.	med.	closed	½ closed	½ closed	—	—	—	—	K	2 sm.	sm.	sm.	—	low br.	br.	sharp	—	med.	—
164	h., nar. med. el.	med. p.c.d.	comp.	med.	compl.	almost closed	almost closed	begun	sev. lr.	—	—	—	H	1 med.	lr.	—	—	med. br.	br.	med.	—	h.	r. and l. com.
170	h., nar. med. el.	br.	comp.	med.	compl.	almost closed	closed	begun	—	—	—	—	H	1 med.	sm.	—	—	med., br.	med.	dull	—	med.	r. and l. com.
199	br., prot.	br. p.c.d.	prot.	st.	med.	⅓ closed	begun	begun	—	—	—	—	H	1 med. 1 sm.	sm.	—	—	med.	br.	sharp	—	med.	—
203	nar. prot.	br. p.c.d.	comp.	st.	compl.	begun at pt.	open	open	—	—	—	—	H	2 sm.	sm.	med.	med.	med.	med.	sharp	—	low	1 r.
205	h., nar. prot.	med. p.c.d. sm.	comp.	med.	med.	open	open	open	sev. lr.	—	1 sm.	—	H	—	med.	med.	med.	med.	nar.	sharp	—	low	1 l.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
77	med.	sm.	sm.	pron.	com.	med.	4–4–3	—	∩	med.	sm.	med.	med.	med.	worn	—	—	Medit.	healed dep. fract.
79	med.	med.	med.	med.	com.	worn	?	—	∩	med. p.g.p. lr.	lr.	sm.	sm.	med.	—	—	—	Guanche	—
81	med.	med.	med.	pron.	com.	all lost p.m.	?	—	∩	deep	lr.	sm.	sm.	sm.	worn	—	—	Guanche	—
82	deep	med.	med.	med.	com.	worn	?	—	U h.	deep	sm.	sm.	—	sm.	—	—	1 lr. l.	Medit.	—
84	med.	med.	med.	?	com.	many lost a m.	?	—	∩ h.	deep p.g.p. lr.	lr.	med.	—	sm.	worn	—	—	Guanche	—
89	?	sm.	sm.	?	com.	poor	?	sev. absc.	Λ	med. p.g.p.	med.	med.	sm.	med.	worn	—	—	Medit.	—
93	med.	lr.	lr.	med.	com.	good worn	?	—	∩	p.g.p. arth.	sm.	sm.	sm.	lr.	worn	l. ind.	—	Medit.	—
97	?	sm.	sm.	pron.	com.	lost a.m.	?	—	? h.	shallow arth.	lr.	med.	med.	med.	worn	r. and l. ind.	1 sm. l. and r.	?	—
104	med.	sm.	sm.	med.	com.	most lost p.m.	?	—	∩	med.	sm.	med.	sm.	med.	—	—	—	Medit.	les. r. pari.
106	deep	sm.	sm.	pron.	com.	good	4–4–4	—	Λ	med. p.g.p.	sm.	sm.	med.	med.	—	—	—	Medit.	—
129	sm.	sm.	sm.	pron.	com.	med.	4–4–4	—	∩	deep	med.	sm.	sm.	med.	—	—	—	near Nordic	—
132	sm.	sm.	sm.	med.	3 m. imp. erup.	good	4–4–4	—	∩	deep p.g.p. lr.	med.	sm.	sm.	sm.	—	—	—	near Nordic	—
154	med.	sm.	sm.	med.	com.	med.	?	—	∩	deep p.g.p. lr.	med.	sm.	sm.	med.	—	sp. proc. lr.	—	Guanche	—
164	?	med.	lr.	?	com.	v. worn	?	absc. m.	?	deep p.g.p.	med.	sm.	med.	med.	arth.	—	—	near Nordic	—
170	med.	med.	med.	med.	com.	good	4–4–3	—	∩ h.	deep	?	sm.	sm.	sm.	—	—	—	near Nordic	—
199	?	med.	med.	?	com.	most lost a.m.	?	—	?	shallow	sm.	med.	sm.	med.	—	—	—	near Medit.	—
203	deep	lr.	lr.	med.	comp.	most lost p.m.	?	—	∩	deep arth.	lr.	med.	med.	med.	arth.	r. com.	—	near Guanche	—
205	sm.	med.	med.	sm.	comp.	med.	4–4–3	—	∩	deep p.g.p. lr.	med.	med.	med.	med.	arth.	—	—	near Medit.	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
209	h., nar. prot.	v. br. tub. lr.	prot.	st.	med.	almost closed	almost closed	½ closed	sev. lr.	—	—	—	H	2 sm.	sm.	—	—	h. nar.	nar.	sharp	—	med.	—
215	br., med. met. sut.	v. br.	prot.	med.	compl.	open	open	open	few sm.	—	few sm.	4 med. epipt.	H	—	med.	med.	sm.	med.	med.	sharp	—	v. low	r. and l. com.
235	h., nar. el.	med.	comp.	med.	med.	open	open	open	sev. sm.	—	—	—	H	—	lr.	med.	—	med.	br.	dull	sm.	low	—
239	med.	br. dep.	med.	med.	med.	almost closed	almost closed	open	few sm.	—	—	—	H	1 sm.	med.	med.	—	med.	br.	sharp	—	low	1 l.
245	med.	med.	comp.	prot.	med.	⅔ closed	⅔ closed	open	—	—	—	—	H	1 sm.	sm.	med.	med.	low br.	br.	sharp	—	h.	—
250	med.	br. tub. lr.	med.	med.	compl.	open	open	open	few sm.	1 lr.	—	—	H	2 sm.	sm.	med.	sm.	low	br.	dull	—	med.	r. and l. com.
252	med.	br. dep.	med.	med.	v. compl.	open	open	open	many sm.	—	—	1 sm. epipt.	H	1 sm.	med.	med.	—	med.	med.	sharp	—	h.	1 l.
257	med.	med.	med.	med.	v. compl.	open	begun at obel.	begun	few med.	—	—	1 r. epipt.	H	2 sm.	med.	med.	—	med.	nar.	sharp	—	med.	1 l.
258	med. prot.	med.	med.	med.	v. compl.	open	open	open	many lr.	—	—	—	H	—	med.	—	med.	h. br.	br.	sharp	—	low	r. and l. com.
299	br. prot.	br.	med.	st.	compl.	begun at pt.	open	begun	—	—	—	—	K	2 sm.	lr.	—	—	med.	med.	sharp	—	low	—
320	h., br. prot.	br.,sm. p.c.d.	med.	prot.	compl.	almost closed	almost closed	almost closed	few sm.	—	—	1 sm. epipt.	H	2 sm.	sm.	med.	med.	h. br.	br.	sharp	—	med.	r. and l. com.
337	h., br. prot.	br., el. p.c.d.	prot.	med.	compl.	almost closed	almost closed	begun	1 sm.	—	—	2 sm. epipt.	H	2 sm.	lr.	med.	sm.	low br.	br.	dull	—	med.	—
338	h., br. med. el.	br. p.c.d.	med.	prot.	compl.	open	open	open	1 sm.	—	—	1 lr. epipt.	H	2 med.	lr.	med.	med.	h. br.	br.	dull	—	low	—
342	h., br. prot.	br.	med.	med.	compl.	begun at pt.	almost closed	open	few sm.	—	—	—	H	2 sm.	lr.	med.	med.	h. nar.	br.	sharp	—	low	r. and l. com.
346	h., br. prot.	br. p.c.d.	comp.	med.	compl.	almost closed	½ closed	open	sev. sm.	—	—	—	H	1 sm.	sm.	med.	med.	med.	med.	sharp	—	low	—
349	br. med. el.	med.	prot.	med.	compl.	begun at pt.	begun at obel.	open	sev. med.	—	—	—	H	—	lr.	—	—	h. nar.	nar.	sharp	—	h.	r. and l. com.
350	l., br. prot.	br. p.c.d.	prot.	st.	v. compl.	open	open	open	sev. sm.	—	—	2 sm. epipt.	H	—	lr.	—	—	low	br.	dull	—	?	—
351	h., br. prot.	br. p.c.d.	prot.	med.	med.	open	open	open	—	3 med.	—	—	H	1 sm.	med.	med.	sm.	med.	nar.	sharp	—	sm.	r. and l. com.
353	h., br. prot.	br., fl.	comp.	med.	compl.	begun	open	open	—	—	—	—	K	1 med.	lr.	—	—	low	med.	sharp	—	h.	1 l.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts.—Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
209	deep	med.	med.	med.	com.	med.	4–4–4	—	∩	deep	lr.	med.	med.	med.	—	ind.	—	near Medit.	les. r. pari.; sl. plagiocephaly
215	deep	med.	med.	med.	com.	good	4–4–4	—	∩	deep	med.	med.	med.	med.	—	—	—	?	—
235	sm.	med.	med.	med.	com.	good	4–4–4	—	∩	deep p.g.p.	sm.	sm.	sm.	med.	arth.	l. com.	2 sm.	Medit.	—
239	med.	med.	med.	med.	com.	med.	?	—	∩	deep p.g.p.	?	sm.	sm.	sm.	—	—	2 med.	near Guanche	les. l. front.
245	?	med.	med.	?	com.	all lost a.m.	?	—	?	deep p.g.p. lr.	med.	sm.	med.	sm.	arth.	com.	—	Guanche	—
250	sm.	med.	med.	med.	com.	good worn	?	—	∩	deep p.g.p.sm.	sm.	med.	med.	sm.	—	ind.	—	near Nordic	—
252	med.	med.	med.	med.	3 m. imp. erup.	good	?	—	∩	deep p.g.p. lr.	lr.	sm.	sm.	lr.	—	—	2 lr.	Medit.	—
257	sm.	v. lr.	v. lr.	med.	com.	good worn	4–4–4	—	∩ h.	deep p.g.p.sm.	sm.	sm.	med.	med.	—	—	—	near Nordic	—
258	med.	med.	med.	med.	3 m. not erup.	good	4–4–4	—	∩	deep p.g.p.sm.	sm.	med.	med.	med.	—	—	—	near Nordic	—
299	med.	med.	med.	sm.	com.	good worn	4–4–4	—	Λ	deep p.g.p. lr.	med.	med.	sm.	lr.	arth.	—	2 med.	near Nordic	—
320	?	sm.	sm.	med.	com.	lost a.m.	?	absc.	?	deep p.g.p.	med.	med.	sm.	lr.	arth.	—	2 lr.	Medit.	hole at breg, old les.?
337	med.	med.	med.	med.	com.	good worn	4–3–	—	?	med. p.g.p.sm.	med.	med.	med.	med.	—	—	2 lr.	Guanche	—
338	med.	lr.	lr.	med.	com.	good worn	4–3–3	—	∩	deep p.g.p. lr.	sm.	med.	med.	med.	—	ind.	—	Guanche	—
342	sm.	lr.	lr.	med.	3 m. erup.	many lost a.m.	?	—	∩	deep p.g.p.	med.	sm.	sm.	sm.	arth.	—	2 sm.	Guanche	—
346	?	med.	med.	?	com.	med. worn	?	absc.	?	deep	med.	med.	sm.	lr.	—	—	1 lr. l.	Guanche	—
349	?	sm.	sm.	?	com.	lost a.m.	?	—	U	deep p.g.p. lr.	lr.	sm.	sm.	med.	arth.	—	—	Guanche	—
350	?	lr.	lr.	?	com.	sev. lost worn	?	—	∩ torus	deep p.g.p. lr.	med.	sm.	sm.	sm.	arth.	—	—	near Guanche	—
351	?	med.	med.	med.	com.	good worn	4–3–3	—	∩ h.	deep p.g.p.	med.	med.	med.	med.	—	—	—	Guanche	—
353	sm.	med.	med.	med.	com.	good worn	4–4–3	—	∩	med. p.g.p.sm.	med.	sm.	med.	med.	—	—	—	near Nordic	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
355	br. prot.	p.c.d. sm. el.	comp.	prot.	compl.	open	open	open	few sm.	—	—	—	H	1 med.	lr.	lr.	deep	low	br.	sharp	—	v. low	—
357	h., br. med. el.	br. tub. lr. med. l.	prot.	med.	compl.	open	begun at obel.	open	1 sm.	—	—	—	K	—	lr.	lr.	med.	low br.	med.	sharp	—	low	1 l.
361	med. prot.	br.,sm. p.c.d.	comp.	prot.	med.	begun	begun	begun	3 med.	—	—	sm. r. epipt.	H	1 sm.	lr.	—	—	med.	br.	sharp	—	med.	—
365	med. prot.	br. sm. el.	prot.	prot.	simple	begun	begun	begun	—	—	—	—	H	2 sm.	med.	med.	med.	med.	med.	sharp	—	med.	1 r.
366	med. prot.	br.,sm. p.c.d. sm. el.	prot.	prot.	compl.	begun at pt.	open	open	1 sm.	—	—	sm. r. epipt.	H	2 sm.	sm.	med.	sm.	h. nar.	br.	sharp	—	med.	r. and l. com.
371	h., med. prot.	med. tub. lr.	comp.	prot.	simple	open	open	open	many lr.	—	—	lr. r. l. epipt.	K	1 sm.	sm.	—	—	low	nar.	sharp	—	med.	—
372	br., med. prot.	med. tub. lr.	prot.	med.	med.	begun at pt.	begun at obel.	open	2 med.	—	—	—	H	2 sm.	lr.	lr.	med.	br. h. nar.	br.	sharp	—	low	1 l.
373	med., prot.	br. tub. lr.	comp.	med.	med.	open	open	open	sev. med.	1 sm.	—	—	H	1 sm.	sm.	—	—	nar.	nar.	sharp	—	med.	r. and l. com.
377	med.	br. med.el.	comp.	prot.	simple	open	open	open	1 sm.	—	—	—	H	2 sm.	med.	—	—	med.	med.	sharp	—	med.	r. and l. com.
380	med.	br. p.c.d. tub. lr.	med.	med.	med.	open	open	open	1 med.	—	—	2 sm. epipt.	H	2 sm.	med.	med.	sm.	h. nar.	med.	dull	—	low	r. and l. com.
388	h., nar. prot.	br. tub. lr.	comp.	med.	compl.	begun at pt.	½ closed	open	few sm.	—	—	—	K	—	sm.	—	—	med.	nar.	sharp	—	h.	—
393	med.	med. p.c.d.	comp.	med.	med.	open	open	open	—	—	—	—	K	1 med.	sm.	med.	sm.	low nar.	med.	sharp	—	low	r. and l. com.
410	h., br. prot.	br. dep.	med.	med.	compl.	begun at pt.	begun at obel.	open	2 med.	—	—	—	K	2 sm.	sm.	sm.	—	med.	med.	sharp	—	med.	—
413	br., med. prot.	br. tub. lr.	med.	prot.	v. compl.	open	open	open	—	—	—	—	K	—	v. lr.	med.	sm.	low nar.	br.	dull	sp. undev.	low	—
415	nar. prot.	med.	med.	med.	compl.	begun at pt.	almost closed	open	—	—	—	—	K	—	med.	med.	med.	med.	br.	dull	—	med.	—
417	h., nar.	med.	med.	prot.	?	closed	closed	closed	?	?	?	?	?	?	sm.	med.	sm.	med.	br.	dull	ind.	med.	—
425	h., br.	br.	med.	med.	compl.	begun	begun	begun	—	1 sm.	—	1 l. epipt.	H	2 sm.	lr.	med.	sm.	h. nar.	nar.	dull	—	med.	—

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
355	deep	lr.	lr.	pron.	3 m. imp. erup.	good	?	—	∩	deep p.g.p.	sm.	med.	med.	med.	—	ind.	1 sm. r.	Guanche	—
357	?	med.	med.	?	com.	lost a.m.	?	—	?	deep p.g.p. lr.	med.	med.	sm.	med.	—	—	—	Guanche	—
361	deep	med.	med.	pron.	3 m. imp. erup.	worn	4–3–	—	∩ torus	med. p.g.p.sm.	med.	med.	med.	med.	—	—	—	near Guanche	—
365	?	med.	med.	?	com.	most lost a.m.	?	absc. m.	∩	deep p.g.p.sm.	med.	med.	sm.	lr.	—	—	—	near Guanche	—
366	?	lr.	lr.	?	com.	most lost a.m.	?	—	?	shallow arth.	med.	med.	med.	med.	—	—	—	near Guanche	—
371	deep	med.	med.	pron.	com.	lost p.m. worn	?	—	∩	deep	sm.	med.	med.	med.	—	—	1 lr. r.	Guanche	—
372	?	med.	med.	?	com.	worn	?	absc.	?	deep p.g.p.sm.	med.	sm.	—	med.	arth.	—	—	Guanche	—
373	sm.	med.	med.	pron.	3 m. imp. erup.	good	4–4–	—	∩ torus	med. p.g.p.sm.	med.	med.	med.	med.	—	—	1 r.	?	—
377	deep	med.	med.	pron.	com.	sl. worn	4–3–	—	∩ torus	med. p.g.p.sm.	med.	med.	med.	lr.	—	—	—	Medit.	—
380	med.	med.	med.	pron.	com.	good	4–4–4	—	∩	med. p.g.p.	lr.	med.	med.	med.	—	ind.	—	Medit.	—
388	med.	sm.	sm.	med.	com.	lost p.m.	?	—	U	med.	med.	med.	sm.	med.	—	—	2 lr.	near Medit.	—
393	?	sm.	sm.	pron.	com.	lost a.m.	?	—	U	deep p.g.p.sm.	med.	sm.	sm.	sm.	—	—	2 sm. l.	Guanche	—
410	med.	lr.	lr.	med.	com.	good worn	?	—	∩	deep p.g.p. lr.	lr.	sm.	sm.	sm.	arth.	—	—	Guanche	—
413	med.	sm.	sm.	pron.	com.	all lost p.m.	?	—	?	deep p.g.p. lr.	lr.	med.	med.	med.	—	—	—	Guanche	—
415	?	sm.	sm.	?	com.	lost a.m.	?	—	?	deep p.g.p. lr.	med.	med.	med.	med.	arth.	—	—	near Guanche	—
417	?	sm.	sm.	med.	com.	lost p.m. worn	?	—	?	deep p.g.p.	med.	sm.	sm.	lr.	—	—	—	Medit.	—
425	?	med.	med.	?	com.	lost a.m.	?	—	?	med. p.g.p.	med.	med.	med.	med.	—	—	2 lr.	Guanche	scl. r. pari.

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
434	low, br. ret. sut.	med. el.	med.	med.	compl.	open	open	open	few sm.	—	—	1 epipt.	H	—	lr.	—	—	med.	med.	sharp	—	med.	r. and l. com.
437	h., br.	br. med.el.	prot.	med.	med.	almost closed	almost closed	almost closed	—	—	—	1 l. epipt.	H	1 sm.	med.	—	—	h. nar.	nar.	sharp	—	low	?
443	h., br. prot.	br. prot.	prot.	med.	med.	begun	begun	begun	few sm.	few sm.	—	—	H	2 sm.	sm.	lr.	med.	low br.	med.	dull	—	low	r. and l. com.
445	h., br. prot.	prot.	prot.	prot.	compl.	open	open	open	—	—	—	—	H	1 sm.	med.	—	—	h. nar.	br.	sharp	—	low	r. and l. com.
481	med. prot.	br. prot. med.el.	prot.	prot.	compl.	open	open	open	—	—	—	—	K		med.	sm.	med.	low br.	med.	dull	—	med.	1 l.
483	h., br.	br. p c.d.	prot.	med.	med.	almost closed	almost closed	begun	—	—	—	1 r. epipt.	H	2 sm.	lr.	med.	—	med.	med.	sharp	—	h.	—
763	l., br. prot.	br. p.c.d.	med.	med.	compl.	begun	begun	begun	2 lr.	—	—	—	H	2 sm.	med.	—	—	med.	med.	sharp	—	med.	1 l.
773	med. prot. met. sut.	br. p.c.d. med.	st.	med.	med.	almost closed	almost closed	begun	—	—	—	—	H	2 sm.	med.	—	—	br. h. nar.	br.	sharp	—	med.	—
771	med.	br.	med.	med.	med.	begun at pt.	begun at obel.	begun	few sm.	—	—	—	K	1 sm.	med.	med.	—	med.	med.	sharp	—	med.	—

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts, — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
434	med.	lr.	lr.	med.	com.	lost a.m.	?	absc.	?	deep arth.	med.	sm.	med.	sm.	arth.	—	2 med.	near Nordic	—
437	?	med.	med.	?	com.	lost a.m.	?	—		shallow arth.	lr.	sm.	sm.	lr.	arth.	—	—	near Medit.	—
443	sm.	lr.	lr.	sm.	com.	med. worn	?	abs. 3 m.	∩	med.	med.	sm.	—	med.	—	—	—	Guanche-Medit.	—
445	deep	med.	med.	med.	com.	caries poor	?	—	∩	deep	sm.	med.	med.	med.	—	—	1 sm. r.	Guanche-Medit.	—
481	med.	med.	med.	med.	com.	lost p.m.	?	absc.	∩	deep p.g.p.	med.	med.	sm.	med.	arth.	—	—	Guanche	—
483	med.	med.	med.	sm.	com.	lost a.m.	?	—	?	med. p.g.p. lr.	med.	med.	med.	med.	—	—	1 sm. r.	near Medit.	—
763	sm.	lr.	lr.	med.	com.	worn	4–4–1	—	∩	deep	med.	med.	sm.	med.	—	—	1 sm. r.	Medit.	—
773	sm.	sm.	sm.	sm.	com.	lost a.m.	?	absc.	∩	deep p.g.p.sm.	med.	med.	med.	med.	—	ind.	—	near Medit.	—
771	med.	lr.	lr.	med.	com.	worn	?	absc.	∩	deep p.g.p.sm.	sm.	med.	med.	med.	—	—	—	near Nordic	—

TABLE XIII. — CRANIAL OBSERVATIONS. TENERIFE. DOUBTFUL

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones								Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others	Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
20	med.	br.	comp.	prot.	simple	closed	begun	begun	few sm.	—	—	—	H	2 sm.	sm.	sm.	sm.	med.	med.	dull	sm.	low	—
34	nar. med.	v. br. tub. lr.	prot.	st.	compl.	open	open	open	—	1 sm. r.	—	—	H	—	lr.	—	—	med.	med.	sharp	—	low	r. and l. com.
51	br., prot. met. sut.	br.	med.	med.	med.	open	open	open	sev. sm.	sev. sm.	—	1 lr. l. epipt.	H	2 med.	sm.	—	—	med.	med.	sharp	—	med.	—
58	med.	med.	med.	med.	compl.	open	open	open	—	—	—	—	K	—	sm.	sm.	—	low	med.	sharp	—	h.	—
87	h , br. met. sut.	br. tub. lr.	med.	prot.	compl.	almost closed	almost closed	open	sev. lr., med.	few sm.	—	1 r. epipt.	H	2 sm.	lr.	sm.	—	low br.	med.	sharp	—	med.	—
90	h. med. el.	br. v.prot.	comp.	med.	v. compl.	open	open	open	few sm.	—	—	—	H	2 sm.	lr.	—	—	low br.	med.	sharp	—	low	r. and l. com.
140	h., nar.	med.	med.	prot.	med.	open	½ closed	open	sev. sm.	few sm.	—	2 sm. epipt.	H	—	lr.	sm.	med.	h. nar.	med.	med.	—	low	—
163	h., br. prot.	br.	med.	med.	compl.	almost closed	amost closed	⅔ closed	sev. sm.	—	—	—	H	1 sm.	sm.	sm.	med.	med.	med.	sharp	—	h.	r. and l. com.
187	br., prot. met. sut.	v. br. p.c.d.	prot.	prot.	compl.	open	open	open	sev. lr.	—	—	—	H	2 sm.	sm.	sm.	sm.	low	br.	sharp	—	med.	—
204	h., br. prot.	v. br.	prot.	med.	med.	closed	closed	almost closed	?	—	—	—	?	2 sm.	sm.	sm.	—	br. med.	med.	sharp	—	low	—
227	low, br,, med.	med. p.c.d.	comp.	med.	compl.	open	open	open	few sm.	—	—	—	H	?	med.	sm.	sm.	med.	med.	sharp	—	h.	—
237	h., br.	br.	prot.	med.	med.	begun at pt.	almost closed	begun	?	?	?	?	H	1 sm.	lr.	sm.	sm.	h. br.	med.	sharp	—	low	—
259	nar. med. el.	med. tub. lr.	comp.	prot.	v. compl.	open	open	open	sev. med.	—	—	—	H	2 sm.	sm.	sm.	—	low br.	med.	sharp	—	h.	—
374	low, nar. ret.	nar. p.c.d.	comp.	prot.	compl.	almost closed	almost closed	begun	3 lr.	—	—	—	H	2 sm.	sm.	—	—	h. nar.	nar.	sharp	—	h.	—
411	h., nar. ret.	nar. m. el.	comp.	prot.	med.	open	open	open	few sm.	—	—	—	K	2 med.	med.	med.	med.	low br.	br.	dull	—	low	1 r.
426	br. med. el. met. sut.	med.	prot.	prot.	compl.	begun	begun	begun	—	—	—	—	H	—	med.	sm.	—	br.	br.	dull	—	low	r. and l. com.
729	h., br.	br.	med.	med.	compl.	begun	begun	begun	few sm.	—	—	—	H	—	sm.	—	sm.	h. nar.	nar.	sharp	sm.	h.	—
768	low, br.	br.	prot.	med.	med.	open	open	open.	sev. lr.	—	—	1 epipt.	H	—	med.	—	—	med.	br.	sharp	—	med.	r. and l. com.

TABLE XIII. — CRANIAL OBSERVATIONS. TENERIFE. DOUBTFUL

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posteria Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
20	sm.	sm.	?	med.	com.	caries poor	?	—	∩	med. p.g.p.	sm.	sm.	sm.	med.	—	—	—	Medit.	—
34	med.	sm.	sm.	med.	com.	good	4–4–3	—	∩	deep	—	sm.	—	sm.	—	—	—	?	—
51	med.	med.	med.	pron.	com.	good	4–4–3	—	∩ h.	deep p.g.p.	sm.	sm.	med.	med.	—	—	—	Medit.	—
58	deep	sm.	?	med.	com.	good	4–4–3	—	∩	med. p.g.p. lr.	med.	sm.	sm.	med.	worn	—	—	Medit.	—
87	med.	med.	med.	med.	com.	lost p.m.	?	—	∩	deep p.g.p.	lr.	med.	med.	lr.	—	ind.	2 lr.	Medit.	—
90	med.	med.	med.	pron.	com.	good	4–3–3	—	∩	deep p.g.p.sm.	sm.	sm.	med.	sm.	worn	—	—	Medit.	—
140	sm.	med.	med.	med.	com.	good	4–4–4	—	∩ h.	med. p.g.p.	sm.	sm.	sm.	lr.	—	—	—	Medit.	—
163	med.	med.	med.	med.	com.	lost p.m.	?	—	∩	med. p.g.p.	med.	sm.	med.	sm.	arth.	—	—	near Nordic	—
187	med.	sm.	med.	pron.	com.	good	4–4–3	—	∩	deep p.g.p.sm.	v. lr.	med.	med.	med.	—	—	—	near Guanche	—
204	sm.	sm.	sm.	med.	com.	med.	4–4–4	—	∩	decp p.g.p.sm.	med.	med.	med.	med.	—	sp. proc. lr.	—	near Guanche	les., sag. sut.
227	deep	sm.	sm.	pron.	com.	good	4–4–	—	∩ h.	deep p.g.p.sm.	sm.	sm.	med.	med.	—	—	—	near Medit.	—
237	deep	sm.	sm.	med.	com.	med.	4–4–4	absc.	∩ h.	deep p.g.p. lr.	v. lr.	med.	med.	med.	—	—	—	near Nordic	—
259	med.	v. lr.	v. lr.	med.	com.	worn	?	—	Λ	deep p.g.p. lr.	med.	med.	med.	med.	arth.	—	—	near Nordic	—
374	sm.	v. lr.	v. lr.	pron.	com.	good	4–4–4	—	Λ torus	deep	—	sm.	—	med.	—	—	—	Medit.	—
411	deep	sm.	sm.	pron.	com.	lost a.m.	?	—	?	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	near Guanche	—
426	med.	med.	med.	pron.	3 m. not erup.	lost p.m.	?	—	?	deep p.g.p.	med.	med.	med.	med.	—	—	—	near Guanche	l. temp. broken
729	sm.	med.	med.	sm.	com.	worn	?	—	∩	deep p.g.p.	sm.	med.	med.	med.	—	—	—	near Nordic	—
768	med.	med.	med.	sm.	3 m. not erup.	?	–4–4	—	∩	deep p.g.p.	med.	med.	med.	med.	—	—	1 sm. r.	near Medit.	—

TABLE XIV. — CRANIAL OBSERVATIONS. GOMÉRA. MALE

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
47	v. br. ret.	v. br. p.c.d.	med.	st.	med.	begun at pt.	begun at obel.	begun	4 med.	—	—	—	r. ret. l. H	1 sm.	med.	lr.	med.	br.	med.	sharp	—	low	—
101	br., ret.	br. el.	prot.	st.	med.	almost closed	begun at obel.	begun	sev. sm.	—	—	—	K	—	lr.	lr.	deep	h. nar.	med.	sharp	sm.	med.	—
102	nar., ret.	nar.	comp.	st.	med.	begun at pt.	almost closed	begun	few sm.	—	—	—	H	—	med.	lr.	deep	h. br.	med.	dull	—	low	—
107	h., nar.	nar. tub. lr.	comp.	med.	med.	open	open	open	—	—	—	—	H	1 med.	sm.	—	—	h. br.	br.	dull	sm.	med.	r. and l. com.
108	low, br. ret.	med. el.	med.	st. in. lr.	med.	almost closed	begun at obel.	open	—	—	—	—	H	1 lr.	sm.	lr.	med.	med.	med.	med.	—	low	—
110	h., br.	br.	prot.	med.	med.	open	open	open	sev.	sev.	—	2 epipt.	K	1 sm. —	sm.	med.	med.	low br.	br.	sharp	sm.	h.	—
111	med.	br.	med.	med. in. lr.	simple	almost closed	almost closed	open	—	—	—	—	H	1 sm.	lr.	lr.	med.	med.	med.	dull	ind.	h.	—
113	med.	med.	prot.	med.	med.	open	open	open	sev. lr.	—	—	—	H	1 sm.	sm.	—	—	h. br.	br.	sharp	—	h.	—
114	h., med. br.	med.	med.	prot.	simple	closed	almost closed	begun	sev. med.	—	—	—	K	1 lr.	lr.	med.	med.	med.	med.	sharp	—	low	1 r.
116	br. prot.	br. el.	med.	med.	med.	open	begun at obel.	open	1 med.	—	—	1 r. epipt.	K	2 sm.	lr.	med.	med.	med.	br.	sharp	—	v. low	r. and l. com.
263	h., med. br.	br. el.	med.	prot.	?	open	open	open	sev. med.	—	—	—	H	?	med.	med.	med.	med.	br.	sharp	—	med.	—
265	h., med.	med. el.	comp.	med. in. lr.	compl.	closed	closed	½ closed	sev. med.	—	—	—	K	2 med.	lr.	med.	med.	med.	med.	sharp	—	low	—
268	low, nar. ret.	med.	comp.	prot.	med.	begun at pt.	begun at obel.	open	?	—	—	—	K	—	med.	v. lr.	deep	h. br.	med.	dull	—	v. low	—
269	h., med. br.	med.	med.	med.	med.	open	open	open	2 med.	—	—	—	H	1 sm.	sm.	med.	med.	low br.	br.	sharp	ind.	low	—
270	h., nar.	med.	med.	prot.	med.	closed	closed	closed	?	?	?	—	H	2 med.	med.	med.	med.	med.	med.	sharp	—	med.	11.
273	h., br. prot.	med.	med.	med.	med.	open	open	open	2 sm.	—	—	—	H	—	sm.	sm.	sm.	h. nar.	nar.	sharp	—	h.	r. and l. com.
274	h., br. prot.	v. br.	prot.	prot.	med.	closed	closed	closed	?	—	—	—	?	2 sm.	lr.	med.	med.	h. br.	med.	indist.	—	med.	—
275	h., br.	br.	prot.	st.	simple	begun at pt.	begun at obel.	begun	few sm.	few sm.	—	—	H	2 sm.	med.	sm.	sm.	med.	br.	med.	—	med.	—

TABLE XIV. — CRANIAL OBSERVATIONS. GOMÉRA. MALE

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
47	med.	med.	med.	sm.	com.	good	4–4–4	absc.	U	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	near Alpine	
101	med.	lr.	lr.	sm.	com.	good	4–4–4	—	∩	deep p.g.p. lr.	med.	sm.	med.	med.	arth.	—	—	Alpine-Nordic	—
102	deep	v. lr.	v. lr.	pron.	com.	good worn	4–4–3	—	U	deep	med.	med.	med.	med.	arth.	ind.	—	Guanche-Nordic	2 old les. front.
107	deep	med.	med.	pron.	com.	worn	4–4–3	—	U	med.	sm.	med.	sm.	med.	—	—	2 sm.	Medit.-Negroid	—
108	sm.	lr.	lr.	med.	com.	med.	4–4–4	—	∩	v. arth. p.g.p. lr.	lr.	med.	sm.	med.	—	—	—	near Nordic	—
110	deep	sm.	sm.	sm.	com.	good	4–4–4	—	∩	deep	?	med.	med.	med.	—	ind.	1 r.	near Alpine	—
111	med.	v. lr.	v. lr.	sm.	com.	good worn	?	l. 3 m. abs.		deep	lr.	med.	med.	med.	arth.	—	—	Guanche-Nordic	—
113	med.	med.	med.	med.	com.	worn	?	—	U	med. p.g.p.	?	med.	med.	med.	—	—	—	near Alpine	—
114	med.	med.	med.	med.	com.	good worn	?	—	∩	deep arth.	sm.	med.	med.	med.	—	—	1 r.	Nordic-Guanche	—
116	sm.	lr.	lr.	med.	com.	good worn	4–4–4	—	∩	deep	med.	lr.	med.	med.	—	—	—	Guanche	old les. r. pari.
263	?	v. lr.	v. lr.	?	com.	lost a.m.	?	—	?	med. p.g.p. lr.	med.	med.	med.	med.	arth.	—	—	Guanche	—
265	med.	lr.	lr.	?	com.	med. worn	?	—	∩	deep p.g.p. lr.	v. lr.	lr.	lr.	lr.	arth.	r. com.	1 l., 2 r.	Guanche-Nordic	—
268	—	lr.	lr.	?	com.	good worn	?	absc.	U	med. p.g.p.sm.	med.	med.	lr.	lr.	arth.	—	—	Guanche	—
269	deep	med.	med.	med.	com.	good	4–4–4	—	U	deep	sm.	lr.	lr.	lr.	arth.	ind.	2 med.	near Guanche	—
270	deep	lr.	lr.	sm.	3 m. abs.	good worn	?	—	∩	sm.	med.	med.	sm.	med.	arth.	—	—	Guanche	—
273	med.	sm.	sm.	med.	3 m. imp. erup.	good	4–4–4	—	∩	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	Nordic	—
274	deep	med.	med.	pron.	com.	lost a.m.	?	absc.	∩	deep p.g.p.sm.	lr.	?	?	?	—	—	2 med.	Guanche	—
275	?	sm.	sm.	?	com.	lost a.m.	?	—	?	deep p.g.p.	lr.	med.	med.	med.	—	—	1 sm.	Alpine	old les. l. front.

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
276	h., br.	br. md. el.	comp.	st.	simple	open	closed	open	—	—	—	—	H	1 sm.	med.	med.	med.	med.	nar.	sharp	—	low	l. com.
278	l., br.	v. br. el.	comp.	med. in. lr.	simple	closed	closed	open	—	—	—	—	H	—	lr.	med.	med.	h. br.	br.	dull	—	med.	—
279	nar. prot.	br. tub. lr.	comp.	med. in. lr.	med.	closed	closed	open	—	—	—	1 l. epipt.	K	2 sm.	med.	med.	med.	med.	med.	sharp	—	low	1 r.
280	med.	med.	med.	med.	compl.	open	open	open	sev. lr.	2 med.	—	1 r. epipt.	H	2 sm.	sm.	med.	med.	med.	med.	sharp	—	med.	—
281	br., ret.	br. tub. lr.	med.	st.	med.	open	open	open	sev. lr., sm.	—	—	—	H	2 med.	med.	sm.	med.	h. nar.	med.	sharp	—	med.	r. and l. com.
282	low, br.	br., v. prot.	med.	st.	med.	closed	closed	begun	—	—	—	—	K	2 sm.	sm.	sm.	sm.	low, br.	med.	sharp	—	low	?
285	l., br. ret.	med.	med.	med.	simple	open	open	open	—	—	—	—	H	2 sm.	sm.	med.	med.	med.	med.	med.	—	med.	—
289	h., nar. ret.	br., v. prot.	comp.	st.	med.	closed	closed	almost closed	—	—	—	—	K	1 sm.	med.	lr.	med.	med.	med.	sharp	—	low	—
291	med.	med.	med.	med.	med.	open	open	open	—	—	—	—	ret.	—	med.	sm.	—	med.	med.	sharp	—	low	—
293	h., br.	br.	med.	med.	simple	closed	closed	almost closed	few sm.	—	—	—	H	—	med.	lr.	lr.	med.	br.	dull	?	v. low	—
295	h., nar. ret.	br., v. prot.	med.	med.	simple	open	open	open	2 lr.	sev. sm.	—	—	H	2 sm.	sm.	sm.	med.	h. nar.	nar.	sharp	—	low	—
297	med.	br. p.c.d.	med.	med.	med.	closed	closed	begun	—	—	—	—	H	—	sm.	sm.	sm.	med.	med.	med.	—	h.	—
298	br. med.	med. p.c.d.	med.	prot.	simple	begun at pt.	begun at obel.	begun	sev. sm.	—	—	—	K	—	sm.	med.	lr.	nar.	br.	dull	—	v. low	r. and l. com.
751	med.	br.	comp.	med.	med.	almost closed	almost closed	almost closed	—	—	—	—	H	—	med.	lr.	med.	h. nar.	nar.	sharp	—	h.	—
753	med.	v. br.	med.	med. in. lr.	med.	almost closed	almost closed	begun	—	—	—	—	H	2 v. sm.	lr.	lr.	lr.	fract.	br.	indist.	?	v. low	—
754	low, med.	med. fl.	comp.	med.	med.	open	open	open	sev. sm.	—	—	—	H	—	med.	med.	med.	med.	med.	sharp	—	low	1 l.

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo spinous Foramen	Dehiscences		
276	deep	med.	med.	sm.	com.	?	4–3–3	—	Ω	deep p.g.p. lr.	lr.	med.	med.	med.	—	r. com.	—	Nordic-Guanche	old les. pari.
278	med.	lr.	lr.	med.	com.	worn	?	3 m. abs.	U	deep	v. lr.	med.	med.	med.	arth.	ind.	2 lr.	Nordic-Guanche	—
279	med.	med.	med.	sm.	com.	lost a.m.	?	3 m. abs.	?	deep p.g.p. lr.	med.	med.	med.	med.	—	—	—	Nordic	—
280	med.	med.	med.	med.	com.	?	4–4–2	3 m. abs.	Λ	deep p.g.p.sm.	med.	med.	med.	med.	—	ind.	1 sm.	Nordic	—
281	deep	sm.	sm.	med.	?	good	4–3–	3 m. abs.	U	med.	?	med.	med.	med.	—	—	—	near Alpine	—
282	?	med.	med.	?	com.	most lost a.m.	?	—	U	deep p.g.p.sm.	med.	med.	med.	med.	arth.	—	2 lr.	Alpine	—
285	sm.	med.	med.	sm.	3 m. imp. erup.	good	4–4–4	l. 3 m. abs.	Ω	deep p.g.p.sm.	?	lr.	med.	med.	—	—	—	Nordic	—
289	deep	lr.	lr.	sm.	com.	sev. lost worn	?	—	U	deep arth.	lr.	med.	med.	med.	arth.	l. ind.	—	Guanche-Alpine	old les. l. front.
291	med.	med.	med.	med.	com.	good worn	4–4–4	?	U	deep	med.	sm.	sm.	med.	—	—	—	Medit.	—
293	?	?	?	?	?	?	?	—	?	deep p.g.p. lr.	lr.	med.	med.	lr.	—	—	—	Guanche	—
295	med.	med.	med.	med.	com.	good	4–4–3	—	Ω	deep p.g.p.	med.	sm.	sm.	sm.	—	—	—	Nordic-Medit.	—
297	?	med.	med.	?	com.	all lost a.m.	?	—	?	med. arth.	med.	med.	sm.	med.	arth.	—	—	near Guanche	exos. l. aud. meatus
298	med.	sm.	sm.	lr.	com.	good	4–3–3	—	U	deep	med.	med.	lr.	med.	—	—	2 med.	near Guanche	—
751	sm.	med.	med.	sm.	com.	most lost p.m.	?	alv. absc.	Ω	deep p.g.p.	med.	med.	sm.	med.	arth.	—	1 l.	Nordic-Guanche	—
753	sm.	med.	med.	?	com.	sev. lost v. worn	?	—	Ω	deep p.g.p.	lr.	med.	med.	med.	arth.	—	—	Guanche	les. l. ext. ang. proc.; les l. pari.; sev. fract.
754	med.	sm.	sm.	med.	com.	good	4–4–3	—	U	med. p.g.p. lr.	med.	med.	sm.	med.	arth.	—	—	near Guanche	—

TABLE XV. — CRANIAL OBSERVATIONS. GOMÉRA. FEMALE

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
109	br., ret.	br.	med.	prot.	?	open	open	open	sev. med.	1 sm.	—	—	H	2 med.	lr.	lr.	—	low br.	med.	dull	sm.	med.	1 l.
112	h., br.	br.	med.	med.	med.	closed	closed	open	—	—	—	—	K	—	med.	—	—	h. br.	br.	sharp	—	med.	—
115	h., br.	med.	med.	st.	med.	open	open	open	1 sm.	—	—	—	K	1 sm.	sm.	med.	med.	med.	br.	indist.	—	low	—
266	br.	br. p.c.d.	prot.	med.	compl.	begun at pt.	begun at obel.	begun	sev. med.	2 sm.	—	—	K	2 sm.	sm.	—	—	med.	br.	sharp	sm.	h.	—
267	low, br. prot.	br. p.c.d. el.	prot.	prot.	med.	open	open	open	sev. lr.	1 sm. r.	—	1 l. epipt.	H	2 sm.	sm.	—	—	med.	med.	sharp	—	h.	—
271	h., nar.	br. tub. lr.	comp	prot.	med.	open	open	open	—	—	—	—	H	1 sm.	sm.	—	—	med.	med.	sharp	sm.	med.	r. and l. com.
277	h., nar.	med.	comp.	med.	compl.	open	open	open	sev. sm.	2 med.	—	—	r. ret. l. H.	—	lr.	med.	sm.	med.	med.	sharp	—	low	r. and l. com.
288	med.	med. v.prot. p.c.d.	prot.	med.	med.	open	open	open	—	—	—	—	H	1 sm.	sm.	sm.	—	med.	med.	sharp	—	med.	—
290	low, br.	br.	prot.	st.	compl.	begun at pt.	begun at obel.	open	—	—	—	—	H	2 v. sm.	med.	lr.	med.	med.	med.	sharp	—	med.	—
292	low, br.	br.	prot.	med.	simple	closed	closed	almost closed	few sm.	—	—	—	H	2 sm.	med.	med.	—	med.	br.	med.	—	med.	—
294	med. med. el.	med.	med.	st.	simple	begun at pt.	open	open	— few	—	—	—	K	2 sm.	med.	med.	med.	med.	med.	sharp	—	med.	1 l.
296	br. med.	br.	med.	st.	med.	open	closed	open	sm.	—	—	—	H	2 sm.	lr.	lr.	med.	med.	br.	indist.	ind.	h.	—

TABLE XVI. — CRANIAL OBSERVATIONS. GOMÉRA. DOUBTFUL

103	br., med. el. met. sut.	br. el.	prot.	st.	med.	closed	almost closed	begun	—	—	—	—	H	2 sm.	lr.	sm.	—	med.	med.	med.	—	h.	—
262	low, br. met. sut.	el. p.c.d.	comp.	prot.	med.	open	open	open	few sm.	—	—	—	r. H	2 sm.	med.	med.	sm.	low br.	med.	sharp	—	h.	—
286	low, br.	v. br. prot.	prot.	st.	simple	open	open	open	—	—	—	—	K	1 sm.	med.	—	—	low br.	med.	sharp	—	h.	—
752	br., prot. met. sut.	med.	prot.	prot.	med.	open	open	open	sev. lr., sm.	few sm.	—	—	H	2 sm.	v. lr.	—	—	med.	nar.	sharp	—	low	—

TABLE XV. — CRANIAL OBSERVATIONS. GOMÉRA. FEMALE

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
109	sm.	lr.	lr.	pron.	com.	caries poor	?	—	Ω	deep p.g.p.sm.	med.	med.	med.	med.	—	—	—	Alpine-Medit.	—
112	med.	med.	med.	sm.	com.	worn	?	—	U	med. p.g.p.	med.	med.	sm.	med.	—	—	2 med.	near Nordic	—
115	deep	v. lr.	v. lr.	pron.	com.	lost a.m.	?	—	U	med.	med.	med.	sm.	med.	—	—	—	near Guanche	—
266	?	med.	med.	sm.	com.	lost a.m.	?	—	?	deep p.g.p.	med.	med.	med.	med.	—	—	—	Nordic	—
267	med.	?	?	sm.	com.	caries worn	?	r. 3 m. abs.	?	deep p.g.p.	med.	med.	med.	sm.	—	—	1 sm. l.	near Nordic	—
271	med.	med.	med.	med.	com.	good	4–3–3	—	Ω	med. p,g,p.sm.	med.	med.	sm.	med.	—	—	—	Nordic	—
277	med.	lr.	lr.	sm.	com.	good	4–3–3	—	Ω	deep p.g.p.	med.	sm.	sm.	med.	—	—	—	Nordic-Guanche	—
288	med.	med.	lr.	?	com.	many lost a.m. worn	?	—	?	med. p.g.p. lr.	med.	med.	med.	med.	—	ind.	2 lr.	Medit.	—
290	med.	med.	med.	sm.	com.	caries worn	?	—	Ω	med. p.g.p.sm.	med.	med.	med.	med.	arth.	—	—	Alpine-Medit.	platycephalic
292	med.	lr.	lr.	med.	com.	sev. lost v. worn	?	absc.	?	deep p.g.p.	med.	med.	med.	lr.	arth.	—	—	Medit.	healed lin. fract. l. pari.
294	med.	med.	med.	med.	com.	sev. lost v. worn	?	absc.	?	deep arth.	sm.	sm.	sm.	med.	—	ind.	—	Medit.	—
296	?	sm.	sm.	?	com.	most lost a.m.	?	—	?	deep	sm.	med.	med.	med.	—	—	—	Nordic-Guanche	old dep. les. post l. pari.

TABLE XVI. — CRANIAL OBSERVATIONS. GOMÉRA. DOUBTFUL

103	deep	sm.	sm.	sm.	com.	good	4–4–3	—	Ω	deep p.g.p.	sm.	med.	med.	lr.	—	—	—	Medit.-Alpine	—
262	med.	med.	med.	?	com.	worn	?	—	?	deep	lr.	sm.	sm.	med.	—	—	—	near Medit.	—
286	med.	sm.	sm.	?	com.	worn	?	3 m. abs.	Ω	med. arth.	sm.	med.	med.	med.	—	1 r.	1 l.	near Alpine	—
752	med.	sm.	sm.	med.	com.	sev. lost v. worn	?	—	?	shallow	sm.	med.	med.	—	—	—	1 r. and 1 l.	near Guanche	—

TABLE XVII. — CRANIAL OBSERVATIONS. GRAN CANARIA. MALE

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoisd	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
75	med.	med. p.c.d.	med.	med.	med.	open	open	open	few sm.	—	—	—	K	2 sm.	med.	—	—	med.	med.	dull	—	med.	1 l.
454	h., br. prot.	br. tub. lr.	comp.	prot.	med.	open	open	open	—	—	1 med.	1 r. epipt.	H	1 sm.	med.	sm.	—	med.	med.	med.	—	h.	1 r.
455	br., ret.	med. el.	med.	med.	med.	open	open	open	—	—	—	—	H	—	lr.	med.	sm.	h., br.	med.	sharp	—	med.	—
456	h., br. prot.	br.tub. v. lr.	comp.	prot.	med.	open	open	open	few sm.	—	—	—	H	—	sm.	—	—	h., br.	med.	sharp	—	h.	1 l.
458	l., br. ret.	br.	med.	med.	med.	begun at pt.	open	open	1 sm.	—	—	—	K	1 sm.	lr.	lr.	med.	h.	med.	dull	—	med.	1 l.
459	h., br. prot.	med.	comp.	prot.	simple	open	open	open	sev. lr.	—	—	—	H	1 sm.	sm.	sm.	—	nar. ?	med.	dull	—	low	r. and l. com.
460	med.	nar.	comp.	med.	med.	closed	closed	begun	—	—	—	—	K	2 sm.	sm.	med.	—	med.	med.	indist.	—	low	—
461	low, br.	med.	med.	med.	med.	begun at pt.	open	open	—	—	—	—	H	—	lr.	med.	sm.	h., br.	med.	dull	sm.	v. low	—
462	h., br.	med. el.	comp.	med. in. lr.	med.	begun at pt.	begun at obel.	open	—	—	—	—	K	1 med.	lr.	lr.	med.	med.	med.	dull	—	med.	—
463	h., br.	br. el.	prot.	prot.	med.	open	open	open	few sm.	few sm.	—	—	H	—	med.	lr.	med.	h., br.	br.	dull	ind.	med.	—
464	h., br., prot.	br. fl.	prot.	st.	med.	begun at pt.	open	open	—	—	—	—	K	1 med.	lr.	sm.	—	med.	med.	sharp	—	med.	—
465	h., br.	br. el.	prot.	prot.	simple	½ closed	open	open	—	—	—	—	H	2 med.	lr.	sm.	sm.	med.	med.	sharp	—	low	r. and l. com.
467	med.	med. el.	comp.	prot. lam. fl.	med.	begun at pt.	open	open	sev. med.	sev. sm.	—	1 lr. l. epipt.	H	1 sm.	sm.	sm.	—	low	med.	indist.	—	med.	—
471	med.	br. tub. lr.	comp.	med.	compl.	begun at pt.	open	open	few med.	—	—	—	K	1 sm.	med.	med.	med.	med.	med.	sharp	—	med.	—
472	br., el. met. sut.	med. el.	prot.	med.	compl.	open	open	open	2 lr.	—	—	—	H	—	med.	lr.	med.	h., br.	med.	sharp	—	low	—
473	h., br.	med.	med.	prot.	simple	begun	begun	begun	sev. sm.	1 sm.	—	—	K	1 sm.	lr.	lr.	deep	h. nar.	med.	dull	ind.	med.	—
475	h., br.	br. tub. lr.	comp.	prot.	compl.	begun	begun	begun	4 lr.	—	—	1 r. epipt.	H	—	sm.	lr.	med.	med.	med.	sharp	—	h.	—
476	h., br.	med.	prot.	med.	compl.	begun at pt.	begun at obel.	open	sev. lr.	few sm.	—	—	H	1 med.	med.	med.	—	med.	med.	sharp	—	med.	—
479	med.	br. tub. lr.	prot.	med.	compl.	begun	begun	begun	few sm.	—	—	—	H	2 sm.	med.	—	med.	med.	med.	sharp	—	med.	—
480	h., br.	med.	med.	med.	med.	begun at pt.	begun at obel.	open	1 sm.	—	—	1 r. epipt.	H	—	lr.	lr.	med.	h., br.	med.	sharp	—	med.	—

TABLE XVII. — CRANIAL OBSERVATIONS. GRAN CANARIA. MALE

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
75	med.	sm.	sm.	sm.	com.	good	4–4–4	—	Ω h.	med.	sm.	med.	med.	med.	—	—	—	Medit.	—
454	med.	sm.	sm.	?	com.	poor worn	4–3–3	absc.	Ω	deep	med.	med.	med.	med.	—	—	—	Medit.	—
455	med.	med.	med.	med.	com.	lost a.m.	?	—	?	deep p.g.p.sm.	sm.	med.	med.	med.	—	—	—	Medit.	—
456	med.	sm.	sm.	med.	com.	?	4–4–3	—	Λ	deep	lr.	med.	sm.	med.	—	ind.	—	Medit.	—
458	med.	v. lr.	v. lr.	sm.	com.	worn	?	l. 3 m. abs.	Ω	deep p.g.p. lr.	lr.	lr.	med.	med.	—	ind.	—	Guanche	front. fl.
459	med.	med.	med.	?	com.	lost a.m.	?	alv. absc.	U	med. p.g.p.sm.	med.	sm.	sm.	med.	—	—	—	Medit.	—
460	med.	v. lr.	v. lr.	v. pron.	com.	worn	?	—	Ω	deep	med.	med.	med.	med.	—	—	—	Medit.-Guanche	—
461	deep	med.	med.	med.	com.	many lost a.m.	?	absc.	?	med. p.g.p.	sm.	med.	med.	lr.	—	ind.	—	Guanche	—
462	sm.	v. lr.	v. lr.	med.	com.	med. worn	4–4–3	—	Λ h.	deep p.g.p. lr.	lr.	med.	med.	med.	—	—	—	near Guanche	—
463	deep	v. lr.	v. lr.	med.	com.	med. worn	?	absc.	Ω	med.	?	med.	med.	med.	—	—	ind.	Guanche	—
464	deep	sm.	sm.	med.	com.	?	4–3–2	—	Ω	deep p,g.p.sm.	?	sm.	sm.	sm.	—	—	—	Medit.-Guanche	—
465	sm.	lr.	lr.	pron.	com.	good worn	4–4–4	—	Ω	deep	med.	lr.	med.	med.	—	—	—	Nordic-Guanche	plagiocephalic
467	sm.	sm.	sm.	sm.	com.	good worn	?	—	Λ	deep	med.	med.	med.	med.	—	—	—	Medit.	—
471	med.	lr.	lr.	pron.	com.	lost p.m.	?	—	Ω	med. p.g.p. lr.	lr.	sm.	med.	med.	—	—	—	Guanche-Nordic	—
472	sm.	sm.	med.	sm.	com.	worn	?	—	Ω	deep p.g.p. lr.	med.	sm.	sm.	med.	—	—	—	Guanche-Medit.	—
473	med.	v. lr.	v. lr.	sm.	?	many lost a.m.	?	—	Ω	deep p.g.p.	lr.	med.	lr.	med.	—	ind.	—	Guanche	—
475	med.	med.	med.	med.	com.	caries worn	4–4–2	absc.	Λ	deep p.g.p. lr.	med.	med.	lr.	lr.	—	—	—	Nordic-Guanche	—
476	sm.	med.	med.	?	com.	lost a.m.	?	—	?	deep p.g.p. lr.	med.	med.	med.	lr.	—	—	—	Guanche-Nordic	—
479	?	med.	med.	sm.	?	lost a.m.	?	—	?	deep p.g.p.	med.	med.	med.	med.	—	—	—	Medit.	—
480	sm.	sm.	sm.	med.	com.	sev. lost worn	?	—	Λ	deep	?	med.	med.	med.	—	—	—	Guanche-Medit.	—

TABLE XVIII. — CRANIAL OBSERVATIONS. GRAN CANARIA. FEMALE

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower-Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
466	h., br. prot.	br., fl.	comp.	st.	med.	begun	begun	begun	—	—	—	—	H	—	med.	—	—	med.	med.	med.	—	med.	—
469	h., br. prot.	med.	med.	prot.	med.	begun at pt.	begun	begun	sev. med.	—	—	—	K	2 v. sm.	lr.	med.	—	med.	med.	med.	—	med.	—
474	med.	med.	comp.	prot.	med.	open	open	open	few med.	—	—	—	H	1 sm.	med.	med.	—	med.	med.	sharp	—	h.	r. and l. com.
477	med.	med.	comp.	med.	med.	begun at pt.	open	open	2 med.	3 med.	—	—	K	1 med.	med.	—	—	low nar.	med.	sharp	sm.	med.	—
478	h., br.	br.	prot.	med.	med.	almost closed	almost closed	open	—	—	—	—	K	1 sm.	med.	—	—	low nar.	med.	dull	—	med.	—
804	l., br.	med.	prot.	med.	med.	open	open	open	many sm.	1 sm.	—	1 r. epipt.	H	1 sm.	lr.	med.	—	low br.	med.	med.	—	med.	—

TABLE XIX. — CRANIAL OBSERVATIONS. GRAN CANARIA. DOUBTFUL

468	med. med. el.	med. el.	med.	prot.	med.	begun at pt.	begun	open	—	—	—	—	H	2 sm.	sm.	sm.	—	low br.	br.	med.	—	med.	r. and l. com.

TABLE XX. — CRANIAL OBSERVATIONS. HIERRO. MALE

300	h., nar.	med.	prot.	st.	med.	begun at pt.	closed	closed	?	—	—	—	H	—	med.	med.	med.	med.	med.	dull	—	low	—
305	h., br.	br.	prot.	med.	compl.	begun at pt.	almost closed	almost closed	?	—	—	—	H	1 sm.	v. lr.	med.	sm.	h. br.	br.	dull	—	med.	1 r.
307	br. prot.	br.	med.	med.	med.	open	open	open	—	—	—	—	H	1 sm.	med.	sm.	sm.	low br.	br.	indist.	sm.	low	r. and l. com.
308	low. br.	br. tub. lr.	med.	prot.	compl.	almost closed	almost closed	begun	sev. sm.	sev. sm.	—	—	H	1 sm.	med.	sm.	med.	low br.	br.	sharp	—	med.	—
309	low, br.	med.	prot.	med.	simple	begun	begun	begun	1 sm.	—	—	—	K	—	med.	sm.	sm.	h. nar.	br.	sharp	—	h.	—
310	br., ret.	med.	med.	med.	simple	begun at pt.	begun	open	—	—	—	3 epipt.	?	2 med.	sm.	med.	sm.	med.	med.	sharp	—	h.	r. and l. com.
724	h., br. prot.	br.	med.	med.	compl.	open	open	open	—	—	—	2 lr. epipt.	K	2 med.	med.	sm.	sm.	low br.	br.	dull	sm.	low	—

TABLE XVIII. — CRANIAL OBSERVATIONS. GRAN CANARIA. FEMALE

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo spinous Foramen	Dehiscences		
466	med.	med.	med.	?	com.	lost a.m.	?	—	?	med. sm.p.g.p.	med.	med.	med.	lr.	—	—	2 sm.	Medit.-Guanche	—
469	med.	sm.	sm.	pron.	com.	good worn	?	cong. absc.	Λ	med. p.g.p.	?	med.	med.	med.	—	—	—	Medit.	—
474	med.	lr.	lr.	sm.	com.	lost p.m.	?	3 m. abs.	∩	med. p.g.p.	med.	sm.	sm.	med.	—	—	—	Medit.	—
477	sm.	med.	med.	sm.	com.	med.	?	absc.	∩	med. p.g.p.sm.	sm.	med.	sm.	lr.	—	—	—	Medit.	—
478	?	med.	med.	?	?	lost a.m.	?	—	?	med. p.g.p.	v. lr.	sm.	sm.	lr.	—	—	—	Guanche-Medit.	—
804	med.	med.	med.	pron.	com.	good	4–4–4	—	∩	med.	sm.	med.	med.	med.	—	—	1 sm. l.	Medit.	—

TABLE XIX. — CRANIAL OBSERVATIONS. GRAN CANARIA. DOUBTFUL

468	med.	sm.	sm.	med.	com.	worn	?	—	∩	deep p.g.p.	med.	med.	med.	med.	—	—	1 sm. r.	Medit.	—

TABLE XX. — CRANIAL OBSERVATIONS. HIERRO. MALE

300	?	v. lr.	v. lr.	sm.	com.	lost a.m.	?	—	∩	deep p.g.p.	?	med.	sm.	sm.	arth.	—	—	Guanche-Nordic	—
305	med.	v. lr.	v. lr.	?	?	lost a.n. worn	?	—	?	deep arth.	med.	lr.	med.	med.	arth.	—	—	near Nordic	—
307	sm.	med.	med.	sm.	3 m. imp. erup.	good	4–4–	—	∩	sm. p.g.p.	med.	med.	med.	med.	—	—	—	Medit.	—
308	sm.	sm.	sm.	sm.	com.	poor worn	?	absc.	∩	arth. p.g.p. lr.	?	?	?	?	—	—	2 med.	near Medit.	—
309	?	v. lr.	v. lr.	?	com.	lost a.m.	?	absc.	?	deep arth.	med.	lr.	med.	lr.	—	—	—	Medit.	—
310	?	med.	med.	?	com.	worn	?	sev. absc.	∩	med.	med.	sm.	sm.	med.	—	—	2 l.	near Nordic	—
724	sm.	med.	med.	sm.	com.	?	4–3–2	—	U	deep p.g.p.	med.	med.	sm.	med.	—	—	—	Guanche-Medit.	—

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
725	med.	med. p.c.d.	med.	prot.	compl.	open	almost closed	open	—	—	—	2 sm. epipt.	K	1 med.	sm.	med.	sm.	med.	med.	dull	sm.	low	—
726	med.	med.	med.	prot.	med.	closed	closed	open	—	—	3 med.	1 r. epipt.	H	2 sm.	sm.	sm.	sm.	med.	med.	—	lr.	med.	—
727	low, br. ret.	med. el.	med.	med.	compl.	begun at pt.	begun at obel.	closed	?	2 med.	—	—	K	—	v. lr.	lr.	med.	h. nar.	med.	sharp	—	low	—
739	h., br.	med.	med.	med.	med.	begun at pt.	almost closed	open	—	—	—	—	K	—	med.	med.	sm.	med.	med.	sharp	—	med.	—
740	h., br.	br.	med.	med.	compl.	closed	closed	closed	?	—	—	1 l. epipt.	K	1 sm.	sm.	—	—	h. br.	br.	dull	sm.	med.	1 l.
744	br. med. el.	med.	prot.	med.	med.	begun at. pt.	almost closed	almost closed	sev. lr.	—	—	—	?	2 med.	med.	sm.	—	h. nar.	nar.	sharp	—	low	—

TABLE XXI. — CRANIAL OBSERVATIONS. HIERRO. FEMALE

301	med.	med. m. el.	med.	med.	med.	closed	closed	closed	?	—	—	—	H	1 sm.	med.	med.	med.	h., br.	br.	dull	sm.	h.	r. and l. com.
302	h., nar.	med.	comp.	med.	med.	begun at pt.	almost closed	open	few sm.	—	—	—	K	1 sm.	med.	med.	—	med.	med.	dull	—	h.	—
304	h., br. met. sut.	med.	prot.	med.	med.	open	begun at obel.	open	—	few sm.	—	2 sm. epipt.	H	1 sm.	lr.	med.	—	low br.	med.	dull	sm.	med.	r. and l. com.
306	med.	med.	prot.	med.	compl.	open	open	open	1 sm.	—	—	—	H	2 sm.	lr.	med.	—	h. nar.	nar.	sharp	—	med.	—
311	med. prot.	med. p.c.d.	med.	prot.	med.	closed	closed	open	—	few sm.	—	—	K	2 med.	med.	—	—	low br.	br.	dull	—	med.	—
741	low, nar. prot.	med.	comp.	prot.	med.	open	begun	begun	sev. lr.	—	—	sm. r. epipt.	K	—	sm.	—	—	h. br.	br.	dull	ind.	h.	—
743	h., prot.	med.	med.	med.	med.	begun at pt.	open	open	—	1 sm.	—	—	K	2 med.	lr.	—	—	low br.	br.	dull	sm.	med.	—

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts. — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterygo-spinous Foramen	Dehiscences		
725	med.	med.	med.	sm.	com.	worn	?	—	∩	deep p.g.p.sm.	med.	med.	med.	med.	—	—	—	Medit.	—
726	sm.	lr.	v. lr.	pron.	com.	good worn	4–3–3	—	U	deep p.g.p.	lr.	med.	med.	med.	—	—	—	Medit.	—
727	?	v. lr.	v. lr.	?	com.	lost a.m.	?	—	?	deep p.g.p.	lr.	med.	med.	lr.	—	sp. proc. lr.	—	Guauche	—
739	?	lr.	lr.	?	com.	lost a.m.	?	—	∩	deep p.g.p. lr.	med.	med.	med.	med.	—	l. ind.	2 med.	Guanche-Medit.	—
740	sm.	med.	med.	sm.	com.	worn	?	3 m. deg.	U	deep p.g.p.sm.	med.	med.	med.	med.	arth.	—	1 l.	Medit. near	—
744	deep	?	?	med.	com.	worn	?	med.	∩	med.	med.	med.	sm.	med.	—	—	—	Guanche	—

TABLE XXI. — CRANIAL OBSERVATIONS. HIERRO. FEMALE

301	?	med.	med.	?	?	lost a.m.	?	—	?	med. p.g.p.	med.	med.	sm.	med.	—	—	—	Medit.	—
302	sm.	lr.	lr.	med.	com.	good	4–4–	3 m. abs.	∩	med. p.g.p.	med.	sm.	sm.	med.	—	—	—	Medit.	—
304	sm.	med.	med.	med.	com.	lost p.m.	?	—	∩	sm. p.g.p.	med.	med.	med.	lr.	—	—	2 med.	Medit.	—
306	deep	?	?	pron.	com.	worn	4–3–3	—	∩	deep	med.	sm.	sm.	med.	arth.	—	1 sm. r.	Medit.	—
311	med.	lr.	lr.	sm.	com.	lost a.m.	?	—	U	p.g.p. v. sm.	?	med.	sm.	med.	—	ind.	2 sm.	Medit.	—
741	?	sm.	sm.	?	com.	worn	?	absc.	U	med. p.g.p.	med.	med.	sm.	med.	—	—	1 sm. r.	Medit.-Negroid	—
743	med.	med.	v. lr.	v. pron.	com.	worn	?	—	U	deep p.g.p.	lr.	med.	med.	med.	—	—	—	Medit.-Negroid	—

TABLE XXII. — CRANIAL OBSERVATIONS. FUERTEVENTURA. MALE

Catalogue No.	Cranial Vault				Sutures. — Ossification				Wormian Bones				Pterion	Parietal Foramina	Mastoids	Supra-orbital Ridges	Facial Portion						
	Frontal Region	Sagittal Region	Temporal Region	Occipital Region	Serration	Coronal	Sagittal	Lambdoid	Lambdoid	Temporo-Parietal	Temporo-Occipital	Others					Nasion Depression	Nasal Bridge	Nasal Aperture	Lower Borders	Sub-nasal Grooves	Orbits	Infra-orbital Suture
484	h., br.	med.	med.	med.	med.	almost closed	open	open	—	—	—	—	H	—	v. lr.	med.	med.	med.	nar.	med.	—	med.	—
728	l. br., ret.	med.	comp.	prot.	med.	almost closed	closed	closed	?	—	—	—	K	1 med.	med.	v. lr.	med.	med.	med.	dull	—	med.	—

TABLE XXIII. — CRANIAL OBSERVATIONS. LA PALMA. MALE

756	h., br.	med.	comp.	med.	simple	open	open	open	—	—	—	—	H	2 med.	v. lr.	v. lr.	med.	med.	med.	indist.	v. lr.	low	2 com.

TABLE XXII. — CRANIAL OBSERVATIONS. FUERTEVENTURA. MALE

Catalogue No.	Facial Portion				Teeth				Base of Skull									Type	Pathological
	Sub-orbital Fossae (canine)	Malars	Zygomata	Alveolar Progn.	Dentition	Quality	Upper Cusps	Abnormalities	Palate Shape	Glenoid Fossae	Styloids	Foramen Lac. Med.	Petrous Parts, — Depression	Posterior Lac. Foramina	Occipital Condyles	Pterigo-spinous Foramen	Dehiscence		
484	med.	v. lr.	v. lr.	?	?	lost a.m.	?	absc.	Ω	deep p.g.p.	lr.	med.	med.	—	—	—	—	Guanche	—
728	?	v. lr.	v. lr.	?	com.	lost a m.	?	absc.	?	deep p.g.p.	lr.	med.	med.	—	—	ind.	—	Guanche	—

TABLE XXIII. — CRANIAL OBSERVATIONS. LA PALMA. MALE

756	med.	v. lr.	v. lr.	sm.	com.	good worn	?	—	Ω h.	deep	v. lr.	med.	med.	—	—	1 r. comp.	—	Guanche	hole in sag. sut. 15 mm. from breg. made p.m. by circular scraping

LIST OF ABBREVIATIONS USED IN TABLES

absc.	abscess
abs.	absent
alv.	alveolar
a. m.	*ante mortem*
ang.	angular
antr.	antrum
arth.	arthritic
br.	broad
brok.	broken
breg.	bregma
c.	canine, canines
cm.	centimeter, centimeters
com.	complete
comp.	compressed
compl.	complex
cont., contus.	contusion
cor.	coronal
cr.	crest, crests
defl.	deflected
dep.	depressed, depression
div.	divided
el.	elevation, elevated
epipt.	epipteric
erup.	erupted
exos.	exostosis
ext.	external
fl.	flat
fr., fract.	fracture
front.	frontal, frontal region
gl.	glenoid
glab.	glabella
h.	high
H.	H-form
imp.	imperfect, imperfectly
in.	inion
inc.	incisor
incom.	incomplete
ind.	indicated
indist.	indistinct
irreg.	irregular, irregularly
intermed.	intermediate
interp.	interparietal
K.	K-form
l.	left
lac. med.	lacerum medium
lamb.	lambdoid
les.	lesion
lin.	linear
lr.	large
lr. sm.	large and small
m.	molar, molars
max.	maxilla
med.	medium
Medit.	Mediterranean
met.	metopic
mid.	middle
nar.	narrow
nas.	nasal bones
no.	number
obel.	obelion
obl.	obliterated
occ.	occipital, occiput
orb.	orbit, orbital
os. breg.	os bregmaticum
pari.	parietal
p. c. d.	postcoronoid depression
p. g. p.	postglenoid process
platy.	platybasic
p. m.	*post mortem*
premat.	premature
proc.	process
progn.	prognathism, prognathous
pron.	pronounced
pt.	pterion
r.	right
red.	reduced
ret.	retreating
reto.	retourné
sag.	sagittal
scf.	scaphoid
scler.	sclerosis
sept.	septum
sev.	several
sl.	slight, slightly
sm.	submedium, small
s. m. p.	supramastoid process
sp.	spine, spinous
st.	steep
sup.	*supra*
supt.	suppressed
temp.	temporal
t. p. s.	temporo-parietal suture
trans.	transverse
trepan.	trepanation
tub.	tuberosity, tuberosities
U.	U-shaped palate
uner.	unerupted
Λ.	hyperbolic palate
v.	very
Π.	parabolic palate

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